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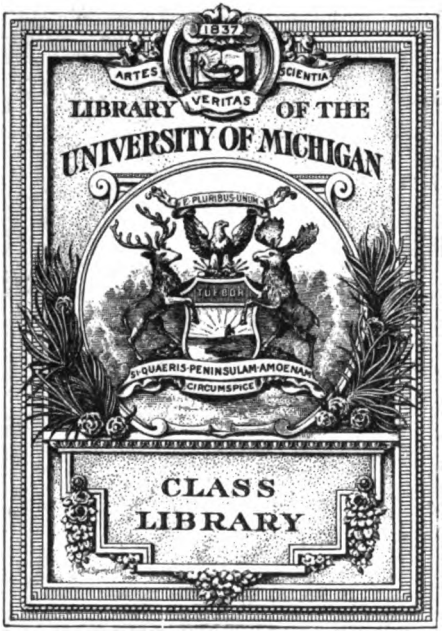

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NINETEENTH BIENNIAL REPORT

OF THE

Bureau of Agriculture Labor and Statistics

FOR

1910-1911

FRANKFORT, KY.
THE KENTUCKY STATE JOURNAL PUBLISHING CO.
1912

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NINETEENTH BIENNIAL REPORT

OF THE

Bureau of Agriculture, Labor and Statistics

STATE OF KENTUCKY

1910-1911

COMMONWEALTH OF KENTUCKY,
OFFICE OF COMMISSIONER OF AGRICULTURE.
Frankfort, Kentucky, December 31, 1911.

TO THE GENERAL ASSEMBLY OF KENTUCKY:

I have the pleasure of submitting to this honorable body the Nineteenth Biennial Report of the Bureau of Agriculture, Labor and Statistics, also the report of the State Board of Agriculture, Forestry and Immigration, making a complete report of the work accomplished by the Department of Agriculture from January 1st, 1910 to December 31st, 1911.

In making this report I have two objects in view; the first is to render as complete a report as possible of the work of the past two years that you may see what has been accomplished with the appropriations that you have made for this department. The second is to make a report that will be interesting and instructive reading for the people of the State. I feel that it is right and proper for me to do this for it has been my endeavor to get as close to the people of the State as possible during my term as Commissioner and to impress upon them that Kentucky has wonderful resources and great agricultural possibilities that can be developed by the application of scientific principles.

I wish to thank the members of the Kentucky Experiment Station for their co-operation with me in the work of rendering assistance to the farmers of the State.

Frankfort, 11-19-29 T.E.N.

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The members of the State Board of Agriculture, Forestry and Immigration have demonstrated their interest in the development of the State's agricultural resources and under our united effort the Kentucky State Fair is beginning to be recognized as one of the best institutions of the kind in the Union.

I wish to call your attention to the report of the State Immigration Clerk. Under his wise direction a number of high class immigrants have been located at different places throughout the State. There has not been any rush of immigration to the State, it is not the intention of this Department that there shall be, but whenever there is a demand for farm hands, domestic help or laborers of any kind that cannot be supplied in Kentucky, then our Immigration Clerk endeavors to fill these places with sturdy, honest, industrious immigrants who will become good and profitable citizens.

At all times I have kept in close touch with the State Labor Inspector, rendering him all the assistance possible in his work of enforcing those laws that were passed to better the condition of the laboring men and prevent children of tender years from having their lives blighted by hard physical labor. With better sanitary conditions for the father and mother who work and with the children in school we will have a better class of citizens, socially and morally.

I am including a report of the Kentucky State Horticultural Society. The people of Kentucky scarcely realize what the horticultural possibilities of the State really are and I am including this report with the hope that it will arouse them to the importance of this industry, which, when properly developed, will be the source of much profit to the people of the State.

There has been such a demand for the "Study of Forest Conditions in Kentucky" by J. S. Holmes, Forest Examiner, Forest Service, and R. C. Hall, Forest Assistant, Forest Service, which was published in the 18th Biennial Report, that I have decided to include it in this report also. This was the second report on forest conditions in Kentucky made by the Department of Agriculture of this State in co-operation with the Department of Forest Service, Washington, D. C. The first Forestry Report, made in co-operation with the United States Department of Agriculture, was published in the 17th Biennial Report, some copies of which are on hand at pres-

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ent. The third and last report, "Progress Report on a Study of Forest Conditions in Kentucky," by R. Clifford Hall, Forest Assistant, Forest Service, has been printed in pamphlet form, a copy of which will be sent to anyone who requests it.

Copies of "A Study of the Wood-Using Industries of Kentucky," compiled by Roger E. Simmons, Statistician, Forest Service, under the direction of myself as Chairman of the State Board of Agriculture, Forestry and Immigration and Commissioner of Agriculture, Labor and Statistics of the Commonwealth of Kentucky, and H. S. Sackett, Chief, Office of Wood Utilization Forest Service United States Department of Agriculture, are in this office for distribution and can be had on request.

I wish to call the attention of the people of Kentucky to the necessity of better roads. I have been urging the importance of good roads for years and I am glad to see the improvements that are being started to better the transportation facilities throughout the State. The farmers in many sections of the State are seriously handicapped because of the lack of good roads. One reason I have urged this question is because good roads are necessary if we want good schools, and we must have good schools to have a citizenship in keeping with the past history of this Grand Old Commonwealth.

I feel that I should make some mention of the work that is being done by the State Live Stock Sanitary Board, of which I am Chairman. I include a report from Dr. A. J. Payne, U. S. Veterinarian, who was sent to Kentucky to assist this Board in the work of eradicating sheep scabies. The U. S. Department of Agriculture has materially facilitated the work of this Board by furnishing us with men who are experienced in this line of work. The Board will take up other diseases of live stock when conditions demand but most of the work so far has been directed along the line of eradicating sheep scabies that the quarantine may be lifted from the State.

I have tried to increase the yield of corn in the State and I believe that I have succeeded in getting enough farmers interested in this movement to accomplish much good. By the distribution of pure bred seed corn I have endeavored to teach the necessity of planting the very best of seed and the reports that come to my office from those who have received

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this seed corn encourage me in the belief that this effort has accomplished the desired result.

I have used my efforts to build up the poultry interests of the state. I have been one of the staunch supporters of the Kentucky Poultry Association and have insisted that the poultry breeders of this state join this association. My motto for the people has been, "Whatever you raise, raise the best."

I have encouraged the extension of the dairying industry, for I believe this state is peculiarly adapted to this branch of farming. It gives good returns to the dairyman and at the same time increases the productiveness of his land. With the growing demand for pure milk and butter the opportunities of the progressive up to date dairyman are almost unlimited.

In accordance with Law I have held, each year, a two-days' farmers' institute in every county in the State during the past two years. I also held a State farmers' institute each year and as many special institutes as my appropriation would justify. I am glad to report that these institutes are growing in interest each year and are becoming great educational meetings. I have endeavored to get the very best lecturers I could, because I think the great object of the Agricultural Department is to teach and encourage scientific methods of agricultural work, for by this art only can we restore fertility to worn out soil and preserve the productive farms of the State in their virgin fertility.

The state has been so rich in natural resources that our people have been prodigal of this inherited wealth. The time has come, however, when we are beginning to realize that we must not only preserve these resources but must repair the damage that has been done to them. In the best agricultural sections of the State the timber has been cleared away and often the land worn out by constant cultivation. I have urged our farmers to raise more livestock, keep more land in grass, practice proper rotation of crops, thus saving the land from the abuse to which it has been subjected.

I have tried to interest the boys in scientific farming by organizing Boys' Corn Growing Contests. I have also had special meetings for the women where experts have demonstrated the advantage of teaching domestic science to the

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girls. If, through any of these efforts, I have succeeded in encouraging some of the boys of this State to stay on the farm and become scientific farmers; if I have started an agitation that will result in lightening the work of the women on the farm; if in any way I have succeeded in lessening the drudgery of farm life and adding to its sweetness and beauty, I will feel that I have been amply repaid for my labors.

Respectfully submitted,

M. C. RANKIN, *Commissioner.*

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DIVISION No. 1

FORESTRY

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STUDY OF FOREST CONDITIONS IN KENTUCKY

SECOND REPORT MADE BY

The Forest Service in Co-operation With the Kentucky State Board of Agriculture, Forestry and Immigration

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BY

J. S. HOLMES,

FOREST EXAMINER, FOREST SERVICE

AND

R. C. HALL,

FOREST ASSISTANT, FOREST SERVICE.

JANUARY, 1909

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GENERAL FOREST CONDITIONS

So far, the study of forest conditions in which the Forest Service co-operating with the Kentucky State Board of Agriculture, Forestry and Immigration, has extended over 59 counties comprises an area of over 13 million acres or a little more than half the total area of the State. Fifty per cent of this area has never been cleared and is now occupied by some kind of forest growth.

The estimated amount of standing timber on this forested area averages about 3,000 feet board measure per acre. At the present rate of cutting, this timber will probably not last more than eighteen years, after which the State can draw upon her own forests only to the extent of the annual growth.

The present forest is largely cut over or culled, and less than one per cent is virgin timber. Probably 90 per cent of the forest land, however, still contains some merchantable timber, although not always enough to make logging operations profitable. An annual production of 180 board feet per acre of forest land, in addition to an average waste of 20 per cent in all operations, gives an annual consumption of about 200 board feet per acre. The annual growth is probably not more than 75 board feet per acre. The timber is, therefore, being cut off more than twice as fast as it is growing. Such a practice is suicidal and cannot long continue. Either the consumption must be very materially reduced, or the annual growth increased. The latter alternative is the more advantageous and practical solution of the problem. The growth of the future forests depends mainly on the amount and condition of the new growth now on the ground. If this young growth is protected and encouraged, instead of neglected as at present, there will be an increase instead of a falling off in timber production. Fire, grazing and careless lumbering have destroyed or prevented satisfactory reproduction on at least one-fourth of the woodland and have injured it more or less on practically all unfenced forest land. If the forest could be protected from these abuses, the yield of timber could be doubled.

The present area of forest in the six districts already covered amounts to about 6,594,000 acres, and is constantly de-

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creasing. The rest of the State probably contains at least half as much more forest land, so that a conservative estimate would place the total area in the State at about 10,000,000 acres. This forest land is growing timber at an average rate of 50 to 100 board feet per acre per annum, probably nearer the lower figure. An increased growth of only 25 board feet per acre would mean an increase in the available supply of timber of 250 million feet, which at a stumpage value of $3.00 per thousand is worth three-quarters of a million dollars. There is no reason why this increase should not be doubled or trebled in time. To obtain this result it is recommended that a definite forest policy be inaugurated. This should include (1) the appointment of a State Board of Forestry to promote the forest interests of the State; (2) the employment of a State Forester to furnish expert advice to the Board, to direct the county fire wardens and to give the people of the State instruction and assistance in the management of their woodlands; (3) the acquirement and administration by the State of forest reserves; (4) the appointment of forest fire wardens in those counties in which the danger from fire is serious; (5) the enactment of efficient forest fire laws. To carry out this policy, an annual appropriation of $10,000 should be made by the Legislature, to include the salary of the State Forester, the purchase of land for forest reserves, and other neressary expenses. In addition to this appropriation it will be necessary for each of the counties needing fire protection to expend not over $100 each, and for the State to contribute an equal amount, making a total of not over $20,000 for the possible 100 counties requiring forest fire wardens. If this annual expenditure of $30,000 accomplishes the desired results, or even a small part of them, it will the most profitable investment the State can possibly make. An increase in the average annual growth per acre of one board foot will repay this entire expenditure to the people of the State, and every increase above one foot per acre will mean so much clear gain.

THE FOREST DISTRICTS OF KENTUCKY

In order to avoid repetition in discussing forest conditions, it is best to consider more or less similar counties in groups or districts, and reserve for the county reports items

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of information that are purely local in character. The most natural way to group these counties for purposes of forest description and management is by watersheds, and since, with few exceptions, the timber products are moved downstream, each drainage system is also a unit of exploitation. In dividing into six districts that part of Kentucky which has so far been covered by this study, this plan has been followed with some modifications. The study of the first district located on the big Sandy River was finished in the summer of 1907, and the other five districts were studied in the following season. The necessity of publishing separate reports on each year's work made it advisable to include in the Big Sandy district two counties, Knott and Letcher, the larger part of which belongs to the Upper Kentucky watershed. Moreover, the difference between the upper and lower valleys of the rivers is so great that the watersheds of the Kentucky and Licking rivers are separated into upper and lower districts. In the western part of the State differences of condition between the various drainage systems are less marked. The counties on the lower Green river are so similar to the Tradewater counties that they are included in the Tradewater district. The only important timbered section of the State that remains to be studied is the upper Green River country which should be treated as a single district.

The forest map which accompanies this report shows the five districts which were studied in the summer of 1908. Each district is divided into irregular areas, the boundaries of which often correspond to the divides between the creeks, especially in the mountains. In the western part of the State, this rule is very often broken, since the creek watersheds there are less distinct and do not exert as marked an influence on forest conditions. The figures on the map show the approximate portion of land still in forest while the color scheme shows the average stand of timber per acre.

The Lower Licking and Tradewater districts are the best settled and least abrupt in topography. Agriculture is of first importance there, while lumbering is secondary. The timber industry is of first importance, on the other hand, in the Upper Licking, Upper Kentucky, Cumberland and Big Sandy districts, which are more or less mountainous in character. The people of this region derive a large part of their income through the sale of fo est products. Explanation has

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about reached high-water mark in the Upper Licking country, but where the other three districts meet on the highest mountains, there are still seven or eight inaccessible counties where a great increase in timber output may be expected with the advent of better transportation facilities. It is difficult to determine which district offers the most favorable conditions for the practice of forestry. The forests in the mountains are as a rule much better stocked, and their reproductive power is not as severely injured by fire and grazing as in the older settled parts of the State. On the other hand, market conditions are much more favorable in the lower districts, especially in the Tradewater, where the coal mines afford a good market even for small and inferior material. Forest management may, therefore, be more intensive in the Lower Licking and Tradewater country, while in the mountain counties, rougher methods may be applied to much more extensive forests.

Each of the reports on the five districts studied in the season of 1908 includes an outline of the physiography, transportation and land classification as introductory to the description of forest conditions. The present stand and output are shown by the five tables included with each report. The first of these gives by counties the area and percentage of land in forest, and the estimated amount of standing timber of each species, to include everything above 12 inches in diameter at breast height. The other four show for each county the output from July, 1907 to July, 1908; (1) of timber floated or shipped in the log from the county in which it is cut, divided into the recognized species; (2) of lumber sawed within the county where it was produced, also by species; (3) of the miscellaneous products that reached the timber market; and (4) of all forest products regardless of species expressed in thousand feet board measure. A brief review of each set of tables begins the discussion of forest conditions. Since the forest type is the basis for all forestry operations, in each case the forests of a district are discussed by types, after which recommendations are made for the management of each type. Such recommendations must necessarily be somewhat general in their nature, and in practice must often be modified to meet the need of the individual problem.

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CUMBERLAND RIVER DISTRICT.

General Conditions.

The nine counties included in the Cumberland River district comprise nearly the whole mountain watershed of the Cumberland River in Kentucky. With the exception of a small portion of Letcher County, which was described in a former report, no other mountain county contributes to the waters of this stream. Small portions, however, of Harlan, Bell and Knox, with nearly half of Jackson, are drained by the Kentucky River.

The country varies in general elevation from 4,000 feet above sea level in Harlan County, the highest part of the State, to less than 600 feet on the most western streams, with an elevation of about 1,000 feet on the limestone plateaus of western Pulaski and Wayne counties. In Harlan and Bell and the southern parts of Knox and Whitley counties, the topography is rugged and broken, the steep narrow ridges often rising to 1,000 or 1,200 feet above the level of the streams. The most striking physiographic features of this region are the two parallel escarpments of the Pine and Cumberland mountains, which extend in a northeast and southwest direction on the southeastern border of the State. They mark the limits of a belt of rugged and mountainous country, drained by the headwaters of the Cumberland River. At Pineville this river breaks out through Pine Mountain, the only interruption for over a hundred miles. Cumberland Mountain, which forms the State boundary for a long distance, is shorter and less regular. These two ridges, and the rough hills adjacent on the north, pass out of the State to the southwest in Whitley County. The region to the northwest of this mountainous country is less rugged, and consists of rolling hills and ridges, broken in many sections by deep, narrow valleys. Sandstone and limestone cliffs border these valleys. With the exception of parts of Rockcastle, Pulaski and Wayne counties, the whole region is underlaid by the Appalachian coal field. The rock is chiefly shale and sandstone. Coal is mined in commercial quantities in all of the counties except Harlan and Jackson, which are as yet without railroad facilities.

With the exception of a large part of Laurel and smaller proportions of the other counties, the soil of this region is

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not especially fitted for agriculture. In consequence, the value of the land depends largely on coal deposits, the amount of standing timber and transportation facilities. Timber and coal land in Harlan County, 20 to 50 miles from a railroad, is assessed at from $5 to $14 an acre, while land valuable chiefly for its timber at similar distances from transportation in Jackson County is assessed at $3 to $9 per acre. In the southwestern counties, where the greater part of the good timber has been cut, timberland is assessed at from $3 to $5 per acre, while coal land will run as high as $10 to $12 per acre. Probably 50 per cent of the land should be used permanently for the production of timber.

The Cumberland River with its principal tributaries, Laurel, Rockcastle and South Fork rivers, carries many logs to the large sawmills at Pineville, Williamsburg and Burnside. The upper courses of these streams are either rough and rocky, or broken by falls, so that above the mouth of Laurel River no rafting is done. Steamboat transportation comes up the Cumberland as far as Burnside.

Two lines of railroad cross the district north and south, the Queen and Crescent in the western and the Louisville and Nashville in the central part. A branch of the latter road runs from Corbin to Norton, Va., through Knox and Bell counties. Many short spurs connect these roads with the various coal mines. The wagon roads are, as a rule, in poor condition. A few miles of pike have been constructed in two or three of the western counties where suitable limestone rock is abundant, but with this exception all of the roads are of dirt, worked by the common militia system, in a few cases supplemented by a special tax. The main roads connecting railroad points with counties that have no railroad facilities, are most in need of improvement. Since they are used chiefly by the citizens of outlying counties, the burden of their maintenance falls with undue weight on the county nearest the railroad.

Practically all the saw-timber cut is manufactured in the district, either by the large mills on the Cumberland River, or by small, portable mills, and the products shipped to all parts of the country. Ties are made chiefly in the western counties, as most of the timber that now remains in this part is small and suited for this purpose. Most of them are shipped out by rail either direct to consumers or to the various Ohio Valley distributing points. Staves are shipped by a large num-

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ber of local dealers to Louisville, Cincinnati and other more distant markets.

Present Stand and Output of Forest Products.

With the exception of the Big Sandy region, examined in the summer of 1907, the Cumberland River district is the heaviest timbered section of Kentucky, with nearly two million acres of forest land averaging 3,400 board feet per acre, making an estimated stand of over six billion feet. Two-thirds of this is made up of the four chief timber trees; white oak, chestnut, chestnut oak and black oak. Nearly one-half of the entire stand is found in Bell and Harlan counties, where the forest covers more than 85 per cent of the area, with an average stand of 6,000 feet per acre. The lower part of the district is not nearly as well stocked, and the average stand per acre is less than 1,000 feet in Pulaski County. The detailed estimate for the various counties is shown in Table 1.

The output of forest products from the Cumberland River district has not yet reached its maximum, and in proportion to the forest area, is considerably less than from the Upper Kentucky and Upper Licking districts. Last year nearly a quarter of a billion feet of timber was put on the market, or about 1-24 of the remaining merchantable stand. Here, as in other districts, railroad ties are an important product, and although coming largely from the lower counties, they exceed in board feet contents either the lumber or the logs. Harlan County supplies one-half of the logs, but very little of the other products. Cooperage stock and spokes constitute a large part of the miscellaneous material. The value of the year's output of forest products is estimated at $3,500,000, which is $20 to every inhabitant of the district, or $100 to the average family. It is important that steps be taken to make this income permanent by maintaining and increasing the productivity of the forests.

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TABLE No. 1.

Estimated amount of standing timber in thousand feet, board measure—by counties and species.

CUMBERLAND RIVER DISTRICT.

COUNTIES.	Total area acres	Area forested acres	Per cent of forest	Average stand per acre, bd. ft	Total	White oak	Chestnut	Chestnut oak	Black oak
Harlan	300,800	266,212	89	7,194	1,915,118	315,769	406,820	385,423	203,839
Bell	226,160	184,811	82	5,616	1,037,824	180,177	227,901	211,680	83,832
Knox	225,280	133,413	59	2,779	370,700	96,355	51,239	53,938	84,745
Laurel	286,720	159,478	56	2,113	337,011	52,931	17,870	29,423	96,890
Jackson	224,640	155,347	69	4,567	709,485	180,386	103,878	117,508	126,387
Rockcastle	197,120	130,371	66	1,890	246,425	31,750	22,976	15,751	39,317
Pulaski	482,560	285,062	59	956	272,574	39,423	35,693	13,580	67,532
Whitley	318,220	215,822	68	2,255	486,703	114,744	21,771	20,984	129,095
Wayne	394,880	281,883	71	2,968	836,691	132,742	80,933	65,392	79,983
Totals	2,656,380	1,812,399	68	3,428	6,212,531	1,144,277	969,081	913,679	911,620

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TABLE No. 1—Continued.

COUNTIES.	Maple	Poplar	Beech	Hickory	Yellow pine	Gum	Basswood	Hemlock	Buckeye
Harlan	172,453	88,854	102,536	43,250	6,180	17,361	61,622	33,724	25,749
Bell	66,610	66,620	81,068	29,407	4,766	20,753	17,776	17,216	9,233
Knox	10,011	15,818	21,936	16,028	599	5,056	7,252	.....	1,695
Laurel	20,629	9,961	5,315	31,227	38,345	15,975	3,585	10,767	852
Jackson	5,097	25,964	12,695	47,598	68,997	8,566	3,692	605	2,690
Rockcastle	8,828	17,703	7,152	23,853	26,422	24,207	7,257	.....	4,373
Pulaski	3,677	25,779	13,806	12,325	22,506	4,979	4,899	18,965	.....
Whitley	17,889	35,568	24,333	15,506	56,231	7,388	7,170	25,224	3,643
Wayne	58,447	74,044	29,619	63,786	21,818	79,346	28,015	11,209	15,456
Totals	363,641	360,311	298,460	282,980	245,864	183,631	141,268	117,710	63,691

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TABLE No. 1—Continued.

COUNTIES.	Ash	Cucumber	Sycamore	Birch	Cedar	Walnut	Locust	Cherry	Scattered
Harlan	3,541	12,880	.....	30,820	.....	2,687	.....	1,610	.....
Bell	9,595	4,725	.....	3,118	.....	2,157	.....	286	904
Knox	1,971	.....	.....	.....	.....	.....	.....	.....	4,057
Laurel	117	.....	.....	.....	.....	117	.....	.....	3,007
Jackson	1,031	.....	.....	.....	.....	2,226	.....	.....	2,165
Rockcastle	3,905	1,725	5,317	.....	1,858	1,927	2,104	.....	.....
Pulaski	.....	.....	2,686	.....	6,724	.....	.....	.....	.....
Whitley	4,269	2,580	.....	.....	.....	.....	.....	.....	308
Wayne	23,999	19,074	28,613	.....	13,570	5,658	4,987	.....	.....
Totals	48,428	40,984	36,616	33,938	22,152	14,772	7,091	1,896	10,441

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TABLE No. 2.

Present annual output of logs in M. ft., B. M., shipped outside the county for manufacture—by counties and species.

CUMBERLAND RIVER DISTRICT.

COUNTIES.	Total	Poplar	Hemlock	Yellow pine	White oak	Chestnut	Cedar	Basswood	Black oak
Harlan	20,965	17,118	1,910	702	248	860	.....	46	.....
Bell	2,212	1,692	204	4	156	120	.....	16	.....
Knox	453	321	51	1	39	30	.....	4	.....
Laurel	3,885	2,620	359	336	190	214	.....	14	94
Jackson	3,790	829	.....	1,906	415	.....	.....	384	.....
Rockcastle	360	154	.....	75	101	.....	.....	.....	30
Pulaski	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitley	2,705	1,105	850	200	281	100	.....	.....	169
Wayne	5,556	1,493	547	415	615	310	1,023	203	133
Totals	39,926	25,322	3,921	3,639	2,045	1,634	1,023	667	426

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TABLE No. 2—Continued.

COUNTIES.	Ash	Buckeye	White pine	Gum	Maple	Beech	Hickory	Walnut	Scattered
Harlan	67	.....	.....	.....	.....	.....	14	.....	.....
Bell	12	.....	.....	.....	.....	.....	8	.....	.....
Knox	3	.....	.....	.....	.....	.....	2	.....	2
Laurel	58	.....	.....	.....	.....	.....	.....	.....	.....
Jackson	.....	256	.....	.....	.....	.....	.....	.....	.....
Rockcastle	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pulaski	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitley	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wayne	208	.....	228	138	125	125	.....	3	.....
Totals	348	256	228	138	125	125	24	3	2

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TABLE No. 3.

Present annual output of lumber in M. ft., board measure (excluding lumber from logs cut in other counties)—by counties and species.

CUMBERLAND RIVER DISTRICT.

COUNTIES.	Total	White oak	Poplar	Pine	Black oak	Chestnut oak	Chestnut	Hemlock	Basswood
Harlan	1,700	375	750	50	.....	175	125	.....	120
Bell	9,548	3,605	1,360	250	715	1,575	825	758	360
Knox	14,467	4,412	2,565	150	1,630	2,460	1,795	.....	890
Laurel	16,246	2,610	2,273	5,814	1,336	1,475	413	2,128	.....
Jackson	2,475	1,012	275	800	113	.....	75	80	7
Rockcastle	4,550	1,545	615	975	900	.....	245	.....	85
Pulaski	11,274	973	2,622	1,171	3,974	.....	1,682	690	93
Whitley	12,054	2,612	2,956	2,516	1,443	197	480	965	179
Wayne	2,325	1,290	690	.....	290	.....	.....	.....	.....
Totals	74,639	18,434	14,106	11,726	10,401	5,882	5,640	4,621	1,734

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TABLE No. 3—Continued.

COUNTIES.	Buckeye	Maple	Gum	Ash	Beech	Hickory	Walnut	Sycamore	Miscellaneous	
Harlan	90	6	9	.....	.....	.....	.....	.....	.....	.....
Bell	.....	50	.....	.....	50	.....	.....	.....	.....	.....
Knox	290	.....	55	.....	.....	.....	.....	.....	.....	220
Laurel	.....	22	128	.....	25	22	.....	.....	.....	.....
Jackson	8	105	.....	.....	.....	.....	.....	.....	.....	.....
Rockcastle	15	.....	160	10	.....	.....	6	2	.....	.....
Pulaski	33	.....	.....	26	2	.....	.....	.....	.....	.....
Whitley	63	253	67	147	100	80	.....	.....	.....	.....
Wayne	.....	30	.....	25	.....	.....	.....	.....	.....	.....
Totals	499	466	419	204	177	102	6	2	220	

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TABLE No. 4.

Present annual output of miscellaneous material—by counties.

CUMBERLAND RIVER DISTRICT.

COUNTIES.	SAWED TIES.			Total number	HEWED TIES.			Total number	Sawn staves, number
	White oak	Black oak	Softwoods		White oak	Black oak	Soft woods		
Harlan	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bell	.....	.....	.....	.....	.....	.....	.....	.....	.....
Knox	1,200	.....	.....	1,200	.....	.....	.....	.....	300,000
Laurel	67,800	36,000	.....	103,800	146,500	21,000	.....	167,500	.....
Jackson	112,400	.....	.....	112,400	270,500	3,600	2,000	276,100	.....
Rockcastle	9,160	1,575	2,635	13,370	77,865	6,050	14,365	98,280	500,000
Pulaski	27,000	14,000	.....	41,000	224,100	11,800	18,700	254,600	3,781,000
Whitley	75,850	3,250	.....	79,100	976,200	800	.....	977,000	.....
Wayne	.....	.....	.....	.....	20,000	.....	.....	20,000	1,565,000
Totals	293,410	54,825	2,635	350,870	1,715,165	43,250	35,065	1,793,480	6,146,000

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TABLE No. 4—Continued.

COUNTIES.	Split staves, number	Heading, number	Spokes, numebr	Poles, number .	Posts, number .	Mining timbers in terms of props, number.	Handles, number	Shingles, (M)..	Cordwood, cords	Tanbark, cords
Harlan	1,750,000	.....	.....	....	....	.....	.....	.....	.....	.....
Bell	1,700,000	.....	.....	....	....	949,300	.....	.....	.....	1,025
Knox	2,790,000	.....	.....	....	....	510,800	.....	.....	.....	.....
Laurel	2,879,000	.....	.....	200	....	226,200	.....	.....	110	624
Jackson	1,771,000	.....	.....	....	....	.....	.....	.....	.....	510
Rockcastle	650,000	.....	1,100,000	4,480	9,500	4,700	625,000	1,300	6,050	487
Pulaski	1,830,000	.....	4,278,000	1,632	....	100,300	.....	2,800	6,000	350
Whitley	1,755,000	75,000	2,056,000	....	....	537,400	.....	.....	.....	841
Wayne	1,560,000	.....	.....	....	....	.....	.....	.....	.....	.....
Totals	16,745,000	75,000	7,434,000	6,312	9,500	2,328,700	625,000	4,100	11,160	3,837

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TABLE No. 5.

Present annual output of timber by counties computed in M . feet, board measure.

CUMBERLAND RIVER DISTRICT.

COUNTIES.	Total	Logs	Lumber	Ties	Spokes	Handles
Harlan	24,765	20,965	1,700	.....	.....	.....
Bell	18,548	2,212	9,548	.....	.....	.....
Knox	21,222	453	14,467	40	.....	.....
Laurel	34,962	3,885	16,246	10,160	.....	.....
Jackson	23,181	3,790	2,475	14,791	.....	.....
Rockcastle	16,231	360	4,550	4,377	1,320	750
Pulaski	38,791	.....	11,274	11,551	5,134	.....
Whitley	63,841	2,705	12,054	41,717	2,467	.....
Wayne	12,431	5,556	2,325	800	.....	.....
Totals	253,972	39,926	74,639	83,436	8,921	750

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TABLE No. 5—Continued.

COUNTIES.	Staves	Poles	Posts	Heading	Cordwood	Shingles	Mining timbers.
Harlan	2,100	.....	.....	.....	.....	.....	.....
Bell	2,040	.....	.....	.....	.....	.....	4,748
Knox	3,708	.....	.....	.....	.....	.....	2,554
Laurel	3,455	30	.....	.....	55	.....	1,131
Jackson	2,125	.....	.....	.....	.....	.....	.....
Rockcastle	1,380	672	143	.....	2,525	130	24
Pulaski	6,805	245	.....	.....	3,000	280	502
Whitley	2,106	.....	.....	105	.....	.....	2,687
Wayne	3,750	.....	.....	.....	.....	.....	.....
Totals	27,469	947	143	105	5,580	410	11,646

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The Forest.

The forests of the Cumberland River districts vary somewhat according to elevation and topography. Through Harlan, Bell, most of Knox, and the southeastern part of Whitley counties, the character of the forest as a whole corresponds closely with that of the Appalachian hardwood region. White oak, yellow poplar, chestnut oak, chestnut, beach, sugar maple, basswood* and cucumber, mixed in a varying proportion form the chief part of the stand.

To the west and northwest of the higher mountains, the character of the forest changes slightly by the gradual increase in the proportion of the black oaks and pine and by the decrease in the amount of chestnut, chestnut oak, basswood and cucumber. Not more than one distinct forest type occurs, but there are two or three well-defined variations which may be classed as sub-types.

Owing to the remoteness of part of this district from means of transportation, a considerable amount of good timber can still be found, although virgin stands are comparatively rare, and timber which will bear water transportation without sinking, is fast disappearing. The walnut, cherry and large yellow poplar, once common, have been culled from all but a few isolated tracts in Harlan, Bell, Jackson and Wayne counties, while even the smaller sizes are becoming scarce. White oak is the chief timber tree of the region and has scarcely been cut at distances of 10 miles or more from the railroad. It occurs in all situations, but it is more abundant in the mountains and reaches its best development on the hillsides, up to 300 feet above the streams, where it grows in mixture with beech and sugar maple. In the lower counties the best white oak and much of the chestnut oak have been cut out for staves, lumber and ties. Hickory is scattered as single trees through all parts of the region, except where it has been cut out to be used for spokes or handles. On the upper slopes and ridges, chestnut oak and chestnut are usually the most abundant trees. Chestnut is unusually sound and healthy in the higher mountains, where in some parts it forms as much as 30 per cent of the stand. Up to within the last two or three years, little chestnut had been cut except near the railroad, but it is now being floated down the river to the mills

*Linden or linn.

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in increasing quantities. Pine is mixed with the hardwoods, especially chestnut oak, on the sandy ridge or plateau lands of the western counties, and although heavily cut, in many places it still forms as much as 25 per cent of the stand. Shortleaf is the most abundant and most valuable species, although scrub and pitch pine grow in commercial quantities. In some parts of Whitley County, pitch pine forms 50 per cent of the merchantable forest.

In many places in the western counties, a rim of cliffs encloses the deeper valleys. On the slopes between the cliffs and stream, there is another variation in type, which is characterized by the presence of hemlock, which seldom appears elsewhere, although a little of it is found on both sides of Pine Mountain. A mixture of beech, maple, red oak, basswood and other trees, usually more common in the higher parts of the district, tends to strengthen the resemblance between this sub-type and the characteristic mountain forest.

The undergrowth throughout the district is mainly made up of young trees, but except in the parts where fire is comparatively infrequent, the inferior species are reproducing in increasing proportion. However there are some remarkable stands of young yellow poplar in Harlan county, where dense reproduction has taken place on old fields. Reproduction of white and chestnut oak is not as plentiful as it should be, because of the omnipresent hog which fattens on the sweet mast. Hickory and the black oaks are increasing in quantity in all cut-over woods, especially in the western part, and the former tree will be a very valuable part of the future forest where protected from fire. Chestnut and basswood come up readily from sprouts, and while the former forms a fair part of the young growth, the latter is so badly eaten by cattle that it has a poor chance of reproducing itself adequately.

Forest Management.

The conservative management of forest lands in this district, as in the rest of the mountain region, should consist in (1) the avoidance of waste in the use of the mature timber; (2) the provision for a future stand of the most valuable species; and (3) the protection of the young growth on the ground from grazing and fire.

1. The first provision applies to all land on which there is merchantable timber. Simple economies in logging, such

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as cutting low stumps and taking small logs well into the tops, should be practiced wherever market and labor conditions do not make such measures unprofitable. Much unnecessary waste is caused by cutting an area before transportation facilities warrant close utilization. Much chestnut oak is being cut in this and other mountain districts, and the bark is not used, since it will not pay to put it on the market now, because the roads are in a very poor condition and the railroad is as yet too far away. By holding the timber for a few years, good profits could be made from this product which is now wasted. Another form of waste is the use of ash and other valuable trees for mining props, when inferior species, although a little harder to work up, would serve the purpose as well and the valuable timber could be devoted to uses in which its high technical qualities would be appreciated.

2. The present forest should be cut in such a way that the future forest will contain an increasing rather than diminishing proportion of the valuable species. Thrifty seed trees of yellow poplar, ash, red and white oak should be reserved on the slopes and seed trees of yellow pine and chestnut oak on the ridges, leaving at least one tree to the acre of the light-seeded trees and two or three of the oaks. Trees that coppice readily, such as chestnut, basswood and locust, should not be cut in the early fall, as this greatly retards or destroys their sprouting capacity. Hickory already forms an adequate proportion of the young growth so that if fire is kept out this tree will take care of itself, and in most cases, seed trees will be unnecessary.

3. The protection of the young growth during logging seems an obvious precaution, yet it is one that is seldom taken. This is partly due to the fact that the timber is generally sold on the stump and the purchaser's interest in the forest ceases as soon as the merchantable timber is removed. A fine thrifty young poplar, ash or chestnut is often destroyed by felling a large tree on it to ease the fall. If it is necessary to break the fall of a large tree, the least valuable kinds should be selected for the purpose. Owners of timberland, when selling timber, should stipulate that young growth must be injured as little as possible during logging operation, and then see that the stipulation is lived up to.

Fire has not been as general in this district as in some other parts of the State, but destruction of young growth is

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common everywhere, while in Harlan County even mature timber has been killed by the careless, wilful, or malicious burning of the woods. The prevention of fire is the first and most important step in conservative forest management. There can be no improvement in forest conditions as long as the young growth of the best species is killed or periodically injured by fire. The State should aid in the prevention and suppression of forest fires by the passage and enforcement of adequate fire laws, and the individual owner should protect his own property. Fires should be prevented, yet if they start, should be extinguished as soon as possible. Exceptional vigilance should be exercised in a dry season. All lumber operators should be warned against carelessness and penalties for setting fires should be inserted in contracts for the sale of timber. Fire lines may be constructed around and through large properties, along roads, streams and ridges, to prevent or retard the entrance of outside fires and to facilitate the work of extinguishing those that start on the tract. But the first and most important part of a protection policy is to inculcate among the citizens an intelligent and practical sentiment against burning the woods. A well-worded warning notice, drawing attention to the law on the subject and to the injury done to a forest by fire, printed on cloth or on stout paper and posted in conspicuous places, will be effective particularly if it does not contain a threat.

Protection from stock is important, especially on land recently cut over. Hogs destroy much seed, especially of the oaks and hickories. With the possible exception of Bell and Harlan counties, all parts of this district should take advantage of the stock law, at least in so far as it compels the fencing of hogs. Cattle in large numbers destroy the young growth of yellow poplar and basswood and the sooner the stock law in all its bearings can be adopted by the various counties, the better it will be for the forests. It is possible, however, that the more thinly settled and remote counties are not yet sufficiently developed to warrant this restriction of the cattle-raising industry.

County Descriptions.

Harlan County.—Harlan County borders on the Kentucky-Virginia line along the Cumberland divide. The greater part of it lies between this ridge on the southeast and

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Pine Mountain on the north, and is chiefly drained by the Cumberland River which has its principal sources in the county. A small portion of the county extends north across Pine Mountain onto the headwaters of the Kentucky River.

The mounains are rough and steep and rise from 1,000 to 2,000 feet above the level of the streams. The topmost peak of Black Mountain, over 4,100 feet in elevation, is the highest point in Kentucky. No railroad enters the county, but there is a branch of the Louisville & Nashville near the county line in Virginia, to which some of the more valuable forest products are hauled across the Cumberland Mountain. The streams form the chief means of transportation, and although they are too rough and their fall too rapid for rafting, they carry out many thousands of loose logs each season.

Harlan County has an area of approximately 300,800 acres of which only about 10 per cent is cleared. Nearly two-thirds of the total area is owned or controlled by large corporations, mostly coal companies. For this reason, and because of the poor transportation facilities, Harlan is now the best timbered county in the state. The larger yellow poplar was taken out years ago, as it has been through all these mountains, but there is still some good poplar on the heads of smaller streams. White oak is practically untouched over the greater part of the county, and even stave timber has been little cut because of the risk of loss in floating it down the rough streams. There are few sawmills in the county, and at the present time no stave, tie or bark operations, except on a small area that is fairly accessible to the railroad across the Virginia line. Chestnut of good quality forms a large part of nearly all stands, but only within the past year or two has it been cut to any extent and floated down the river to the sawmills.

Fire has done great damage in some places and has killed many mature trees as well as a great deal of young growth. With a county firewarden to patrol in dry weather and concerted action on the part of the large holding companies, fire injury could be largely prevented.

Bell County.—Bell County has an area of 226,160 acres. It is the largest coal producing county in eastern Kentucky, and mined in 1907 over one-fourth of the total output of the coal fields in this part of the State. With the exception of Pine Mountain, which extends through it, the whole county

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is coal-bearing. The topography is rough and broken, the high steep ridges and narrow valleys resulting in a large proportion of absolute forest land and leaving a relatively small amount of land suitable for agriculture, most of which is now cleared.

The Louisville & Nashville Railroad crosses the county from Cumberland Gap northward, with branch lines extending into the various coal districts. The wagon roads might be put in much better condition with great benefit to the county.

All the hardwood species common to the region flourish in Bell County, but the more valuable timber has been culled out, and within a year's time, it is likely that little of the large virgin poplar will be left, while the white oak fit for staves has already been stripped from over half the county. Conditions in this region favor abundant reproduction of the many important hardwoods and if cut-over lands are managed in a rational manner, they will reforest themselves naturally.

The extension of railroads, development of new coal fields and improved shipping facilities, will insure a fuller utilization of the forest. Three of the largest owners who control practically half of the forest area of the county, are interested in a continued supply of forest material for mining purposes and lumber production. They are adopting arbitrary diameter limits, attempting fire protection and exacting conservative use of timber by coal lessees. Some planting has been done in the last four years, and interest in this phase of forestry is growing.

KNOX COUNTY.—Knox County is located on the Cumberland River below Bell County and has an area of about 225,280 acres. It lies north of the Pine Mountain ridge and the country is moderately rough, with irregular ridges separating the valleys. The elevations range from 1,000 feet in the Cumberland Valley to about 2,000 feet on the highest ridges. The Louisville & Nashville Railroad crosses the county and follows the river above Barbourville, with a branch line extending a short distance up Brushy Creek. The roads are in fair condition in good weather, but might be greatly improved.

The chief forest products of the county are staves and lumber. There are several stave "buckers" and nearly thirty small sawmills, and there is a good demand for mining timbers in the neighborhood of the coal mines. Practically all of

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the standing timber has been culled over from one to three times.

More than half of the whole county has been cleared for cultivation, and the forests are now largely confined to the upper slopes. Much of the cleared land, however, is becoming exhausted, and some already abandoned, is beginning to revert to forest.

The forests of the southern part of Knox County resemble very closely those of Bell and Harlan. White oak is the most important tree, although the best of it is being rapidly culled out. The greater part of the yellow poplar has already been taken. Chestnut oak and the black oaks are very abundant and chestnut forms an important part of the forest. In the northwestern part of the county chestnut is of little importance and the black oaks are the most important trees. Pine in mixture with the hardwoods has been common here, but most of the larger trees have been cut, and in some cases, the smaller pine is now being cut for laths.

It is important that the great injury to young growth by fire and grazing be checked as soon as possible. Stock should be fenced and the residents should co-operate in preventing the start or spreading of fire. Care should be taken in lumbering to leave the immature trees standing especially the more valuable species. If such measures are taken, Knox County will be able to maintain its place as a timber-exporting county, and will still supply the increasing local demand for mining and other purposes.

Whitley County.—Whitley County is located on Cumberland River below Knox and has an area of 318,220 acres. This county is divided into three distinct regions according to topography and soil. West of a line running from the mouth of Spruce Creek to the head of Marsh Creek is a sandstone plateau region 1,200 feet and less in elevation. This is characterized by low, rounded ridges with sandy soil, separated by trough-shaped valleys which are usually skirted by outcropping sandstone ledges. Between this sandstone belt and Watts Creek the land is rolling and the soil a red, sandy clay. The remaining southeastern section of the county is mountainous, with short, steep-sloped ridges, rising to a maximum elevation of 2,000 feet.

Coal mining is developed along the route of the Louisville & Nashville Railway, which passes through the county

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in a north and south direction, piercing the famous Jellico district. This road is now building a branch into the Big Patterson Creek country, while the new Cumberland Railroad will tap Mud and Poplar creeks. These new lines will completely open up the Jellico coal field in the southeastern part of the county, and with the other railroads, will afford good transportation facilities for forest products. The wagon roads and bridges are supported by a special tax, as well as by the militia system. The roads are poor in the rougher parts and nowhere are they as good as they should be. Several much needed bridges are now in process of construction.

There are two large saw mills near Williamsburg that take logs from Bell and Harlan counties, while a third, in the extreme western part, is drawing most of its timber from Wayne county. About thirty small saw mills are scattered throughout the country, cutting on small tracts for local and outside demands. Whitley County has been quite thoroughly cut over for saw logs, staves and spoke material. The cross tie industry has flourished until the north half of the county has been almost completely stripped of merchantable white oak.

In the coal district, the hardwoods constitute a source of mining timber. To insure the continuity of this supply, the forests must be cut conservatively and protected against fire and grazing. Some companies, already running short of timber, are restricting the cutting and enforcing fire regulations. A land company has set the example of reforesting old fields.

On the flat ridges north of the river, pine will be a profitable tree to grow for structural lumber, as it grows faster and in thicker stands than the general run of hardwoods and yields more lumber from small sizes. It is especially adapted to the sandy-ridge country, where it grows naturally and should be an important tree there for forest management.

Laurel County.—Laurel County lies between the two converging tributaries of the Cumberland River, Laurel on the south and Rockcastle on the west. On the eastern side the Clay County line follows roughly the divide between the waters of the Cumberland and Kentucky rivers. The total area of the county is approximately 286,720 acres. The topography is rolling, with moderate slopes and flat ridges varied by sharper valleys and more rugged hillsides toward the west.

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The main roads follow the ridges, except in the eastern part, where they drop down into the wider valleys.

The county is traversed by the Louisville & Nashville Railway, and much timber is carried to market both by this road and by the Laurel and Rockcastle rivers. The wagon roads are good in some parts, but are very much neglected in others. With a little work they could be put in much better condition.

About 35 saw mills are scattered throughout the county, but the larger quantity of lumber is sawed in the western half. The stave industry is important, as nearly every farmer increases his income by splitting his white oak into staves. The tie industry in largely confined to the western section where many cross-ties, both hewed and sawed, are floated down the river. Much bark is taken out to the railroad. A great deal of the timber is used for mining purposes, and while many of the coal companies have enough timber on their own lands to last them for some years, a few are already buying part of their supply.

The forest now covers about 50 per cent of the land, and for the most part, is broken into small tracts of 25 to 400 acres, with a few larger stands intact in the western part along the Rockcastle River. With a few exceptions, the forest has now been culled from one to four times or more, and the valuable species taken out, leaving black and scarlet oaks as the dorminant species. Among the young growth, the inferior oaks and hickory are increasing at the expense of poplar and white oak, while chestnut, pine and hemlock seem to be holding their own. Beech and red gum are present in limited quantities, and so far have been very little cut. The only way to restore the productivity of the forest is to stop cutting out the remaining poplar and white oak, and to protect them from fire and stock, so that they may re-establish themselves.

Jackson County.—Jackson County includes about 224,640 acres lying on the divide between the waters of the Cumberland and Kentucky rivers. The tributaries of the Kentucky and its South Fork, chief of which is Station Camp Creek, drain the northern and eastern parts of the county. The southwestern section is drained by the three forks of Rockcastle River, a tributary of the Cumberland. The southeastern part of the county, adjoining Owsley, Clay and Laurel,

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is a rolling country with moderate slopes, largely cleared for farming. The remainder is very rough, with precipitous slopes 300 feet high separating the plateau from the narrow valley floor. The underlying rock in the eastern part of the county is limestone, and here the streams have very little water in them except in time of flood. In the rougher sections there are two types of agricultural land; the small patches of flat land along the creeks which were occupied by the original settlers, and the flat ridge tops and upper coves which are now more and more coming into cultivation. In this ridge type it is very difficult to draw the line between agricultural and forest land, but it might be safe to say that all land supporting a forest growth of more than 20 per cent pine should be kept permanently in forest.

Since no railroad enters the county, the only means of transportation are the large creeks and roads.

Fully one-fourth of Jackson County is owned by corporations whose land is in the central and southwestern sections, and includes nearly all the best timber. Aside from this property, much of which is practically virgin timber, the forest has been heavily culled for logs, ties and staves. On the western edge of the county a great many ties are being cut and hauled to Berea and other points on the Louisville and Nashville Railroad, or are floated down Rockcastle River to Livingston. Ties, logs and staves are being cut along the northern border and floated or hauled to the Louisville & Atlantic Railroad in Estill County.

The most important measure that should be taken in the interest of the Jackson County woodland is fire protection. On the ridges, fires have been severe enough to kill even mature timber, and to wipe out all of the young growth. Fires are especially damaging after logging, and injure the sprouting capacity of the stumps and lay bare the soil. This encourages the development of a dense thicket of inferior sprouts and worthless shrubs. The frequency of waste land made unproductive by fire is a powerful argument for fire protection in this county.

Rockcastle County.—With an area of 197,120 acres, Rockcastle County is drained to a large extent by the tributaries of Rockcastle River, which forms the southeastern boundary between Rockcastle and Laurel counties. Dix River, a branch of the Kentucky, heads in the northwestern part.

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The country is rough and broken in the eastern part, and more rolling in character toward the west. The soil is fertile in the western limestone country and on the larger streams, but becomes thin and poor on the rougher sandstone ridges. Railroad transportation is supplied by the Louisville & Nashville Railway, which operates two lines that traverse the county in different directions. The river is used to move logs, cross-ties and acid wood.

Until recently the making of staves has been the most important forest industry in this county, but this is supplanted to a large extent by cross-tie cutting, which takes smaller trees and is not confined to white oak. All species, except pine, buckeye, poplar and basswood are now cut for ties, the less durable kinds being subsequently treated with creosote. The spoke and handle industry has recently started in the county, and promises to make heavy inroads on the hickory and remaining white oak. Another means of rapid deforestation is the acid wood industry which utilizes chestnut down to the very smallest trees.

The forests still occupy about two-thirds of the land, but thousands of acres have been so devastated by reckless logging and fire that there remains upon the ground nothing but a small growth of black and scarlet oak, pine and scattered hickory. The market conditions that promoted this destruction are just as favorable as forest conservation, if the principles of forest management are intelligently applied. Since the young growth, even of inferior species, attains a market value in a short time, it should be protected from fire and grazing. As small timber, even of inferior species, can be handled with profit, cull and second growth forests can be greatly improved by thinning out the poorer trees. This gives the rest a chance to develop, and at the same time improves the stand by supplying seed only of the best species.

Pulaski County.—Pulaski, the largest county in Kentucky, contains approximately 482,560 acres, and is located on the Cumberland River below Whitley and Laurel counties. The topography is varied and in general changes from rolling farm land on the west side to a ridge country in the northeast broken by precipitous slopes and cliffs. The narrow southern extension of the county is characterized by gentler slopes and broader ridges. The soil varies with the topography and underlying rock; it is thin and stony on the ridges of the eastern part, and there the forests should by all means be maintained.

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Water transportation is provided by the three rivers and two large creeks. Steamboats go up the Cumberland regularly as far as Burnside, while the South Fork, Rockcastle River and other streams are available for floating timber. The Queen & Crescent Railroad traverses the entire length of the county, following the main north and south ridge. The roads, which are worked by the "militia system," could be extended and improved in the rougher parts, but are in fair condition elsewhere. Agriculture, mining and lumbering are the chief industries; the last two are of most importance in the east and south. All classes of forest products are marketed at Somerset and Burnside, where there are saw mills, veneer and spoke factories, excelsior plants and tie yards. About 35 small saw mills are scattered throughout the county. It is impossible to give the exact number, as the mills are portable and frequently cross county lines.

Although more than half of the land is wooded, a large part of it is heavily culled, especially near the railroads and mines. This leaves the good timber scattered in small lots in the western portion and in larger bodies on the extreme east. The present annual output of nearly 16,000,000 board feet, if maintained, will exhaust the present supply in seven years. If the various forest industries of the county are to be put on a permanent basis, it is apparent that cutting must be more conservative and the productivity of the forest land increased. Forest fires have been allowed, or encouraged to run, and have done a great deal of damage to young timber that should form the basis of the future supply. Cattle and hogs have in the past done much damage to young growth and reproduction. However, the stock law has recently been introduced into the county, and if rigidly enforced, it should prevent a great deal of forest destruction.

Wayne County.—Wayne County is located between the Cumberland River and State line, below Pulaski County, and has an area of about 394,880 acres. The southern and western portions are hilly and broken, while in the north, and particularly in the northeast part, the topography takes on more of a rolling character. Although the soil of the lower county is of limestone origin and fertile, there are considerable areas that are best adapted to permanent timber production, comprising probably 45 per cent of the county.

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Except for a lumber and coal road that extends four miles up Rock Creek, no railroad penetrates the county, although work has been commenced on a line from Tateville to Monticello, the county seat. Cumberland River with its South Fork and smaller tributaries forms the chief means of transportation for forest products, and timber from Beaver and Otter creeks is floated as far as Nashville on the Cumberland, although Burnside is the principal market. The improvement of the county roads is contemplated and there are now about thirty miles of improved toll road in use.

The stave business, with an output last year of over two million, is rapidly using up the white oak, and wastes nearly as much as it uses. The lumber and log production is not excessive, since there are fourteen saw mills in the county, with a combined average yearly output of two and a half million feet. Considerable areas have never been heavily logged since the transportation facilities are limited, and it will be probably be some years before all the virgin timber is gone. The most important kinds are white, black and chestnut oak, chestnut, poplar, gum and hickory. Cedar deserves a special mention in this section because of the ease with which it comes in on worn out fields unfit for agriculture, and its value for posts and pencil wood. In order to conserve and improve the forests, more careful methods of logging should be instituted. Owners of white oak timber should well consider whether it would not pay them to reserve young thrifty trees of this increasingly valuable species rather than let them all go for staves at the present market prices. Protection from fire and grazing is needed to insure the best and quickest reproduction of the forests.

UPPER KENTUCKY RIVER DISTRICT.

General Conditions.

The nine counties included in the upper Kentucky River district, Leslie, Perry, Clay, Owsley, Breathitt, Lee, Estill, Wolfe and Powell, together with nearly half of Jackson and part of Rockcastle, occupy the headwaters of the Kentucky River. Jackson and Rockcastle counties are, however, included with the Cumberland River counties. A large part of Knott and Letcher counties are also on the Kentucky River watershed, but they are included in the report published in

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1908. The chief tributaries that form the Kentucky are the Three Forks, North, Middle and South, uniting in Lee County above Beattyville, together with Red River, which flows into the Kentucky at the northwest corner of Estill County. The drainage system is well developed, and there is practically no swamp land. The underlying rock is sedimentary in origin, and belongs to the coal measures, with sandstone and shales interbedded with valuable coal seams. Limestone cliffs outcrop on the northwestern edge of the region. As a whole the country slopes gradually toward the northwest, and the highest ridges drop from an elevation of 2,400 feet at the head of the North Fork to an elevation of 900 feet near the mouth of Red River. The streams flow in rugged V-shaped valleys, with steep and often precipitous sides, and are separated by sharp irregular ridges. Some parts of the most western counties of the group are characterized by more moderate slopes, wider valleys and broader ridges. The elevation of the ridge crests above the stream beds varies from 300 to 1,000 feet. Except for small areas on the larger streams, there is no bottom land. The roughness of the country has been the chief factor in hindering its development.

Here, the greater part of the land is in the possession of small owners, who are dependent upon farming and their labor in the woods. Few of the holdings exceed 250 acres, and in the entire region there are only about 85 holdings of more than 1,000 acres. The largest are in Breathitt, Perry and Leslie counties, and some are nearly 30,000 acres in extent. Mineral rights are generally sold separately from the land; timber, not so frequently. Land is usually valued by the assessors at from $3 to $7 per acre and mineral rights at from $1 to $3. Woodland is not often assessed at over $5 per acre, and if the best timber is cut off, $3 is the more customary figure. Agricultural land is regarded as more valuable than timber land.

The proportion of the entire upper Kentucky region now in forest is estimated to be 70 per cent, varying from 56 per cent in Estill County to 86 in Leslie County. The amount of cleared land is becoming greater all the time, but this increase is limited by the steep and rocky character of the mountain country. Probably 60 per cent of the entire region is absolute forest land, and should not be cleared. Some land of this class has been cleared for cultivation and then aban-

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doned, and this nearly offsets the amount of the agricultural land now in the forest.

The main artery of water transportation is the Kentucky River, navigable to Irvine. Locks are being constructed which will move the head of navigation up to Beattyville. Barges and small craft, however, follow up the Red River and the three forks of the Kentucky long distances, and logs, ties or squared timbers are floated out in flood seasons from most of the little creeks that feed the headwaters of the river. Often the timber is taken to the mouth of the creek by means of a wooden tramroad, and then unloaded into the river and made up into rafts. This method of transportation is expensive, and consequently only the best and most easily handled logs can be utilized.

Railroad transportation has not developed to any extent, because of the impassable character of the country. The four uppermost counties are not entered by any railroad line at all. The Louisville & Atlantic Railroad, connecting Richmond and Jackson, follows the bends of the Kentucky from Irvine to the Junction with the Lexington & Eastern six miles above Beattyville. The latter, entering from Winchester through Powell County, has its terminus at Jackson. The Mountain Central, a narrow gauge feeder, connects this line with Campton, the county seat of Wolfe. The Ohio & Kentucky Railroad operates a line between Jackson and Cannel City. These, with a few private logging lines, comprise the entire system of railway transportation. Wagon roads are maintained by the "militia system," and are in need of more attention to grades and drainage in order that they may not become impassable in wet weather. Money spent upon the roads, if used intelligently, would be saved many times over through the reduced cost of transportation. Moreover, forest management and the general welfare of the country would be greatly promoted.

The chief timber market on the Kentucky River is Irvine, in Estill County. At this point the multitude of log rafts floated down the river are taken up by the agents of the big saw mills located farther down the stream at Ford, Valley View, High Bridge, Frankfort, Louisville and other places. Above Irvine a part of the logs are diverted for the use of the saw mills at Beattyville and Jackson. Clay City, with a large saw mill and other wood working industries, is the chief timber market on Red River. A great many cross-ties are

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bought on the main rivers by local agents of the various large tie companies, and are floated down stream and loaded on cars at Jackson, Beattyville and Clay City. In addition, ties are hauled over the roads to nearly every railroad point, where they are bought by tie companies or by the railroad. Railroad shipments of lumber and select logs usually go to the Louisville or Cincinnati markets. Squared timbers are sent to Quebec for shipment to foreign countries.

Present Stand and Output of Forest Products.

The upper Kentucky district, still heavily timbered, is third in the state in density of stand, both the Big Sandy and Cumberland River districts having more timber per acre in their forest areas. There are about 1,225,000 acres in forest with an average stand of nearly 3,000 board feet per acre, or a total of about four and one-half billion feet of standing timber. Leslie and Perry counties, on the most inaccessible headwaters of the Kentucky River, are the best timbered, with an average stand of about 5,000 feet per acre or over 80 per cent of their total area. Nearly one-third of the standing timber is white oak, the most important tree of the region. There is, of chestnut oak, little more than half as much as of white oak. A detailed estimate of the present stand by counties is shown in Table 6.

The timber output of this region has been on the increase although temporarily checked by the recent financial depression, and has not yet reached its maximum. For the last year the estimated output was over 250 million board feet, or about one-eighteenth of the standing timber. Ties, logs, lumber and staves comprise the bulk of it. The upper counties supply most of the floated timber or logs, while the lumber, ties and staves reach their maximum production in the region provided with rail transportation. The total value of the output is estimated at $3,800,000. The importance of the timber industry is shown by the fact that this value amounts to about $40 for every inhabitant of the district, or $200 to the average family.

More detailed information in regard to the forest industries of the several counties is given in Tables 7 to 10.

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TABLE No. 6.

Estimated stand in thousand feet, board measure—by counties and species.

UPPER KENTUCKY RIVER DISTRICT.

COUNTIES.	Total area acres	Area forested acres	Per cent of forest	Average stand per acre, bd. ft.	Total	White oak	Chestnut oak	Beech	Chestnut
Clay	292,480	175,690	60	3,847	675,825	250,773	179,211	50,018	63,295
Leslie	254,080	218,092	86	5,153	1,123,919	320,125	170,242	112,497	87,007
Perry	214,400	171,484	80	5,009	858,916	291,869	117,239	123,087	103,807
Breathitt	307,200	245,848	80	3,564	876,298	279,390	166,134	122,822	83,825
Owsley	131,840	78,915	60	4,024	317,568	97,294	60,685	55,022	18,092
Lee	128,000	91,287	71	1,925	175,765	19,788	14,886	11,064	15,064
Wolfe	152,960	88,794	58	2,577	228,843	28,587	16,615	13,297	27,297
Estill	163,200	90,894	56	1,414	128,528	7,067	3,199	28,496	8,899
Powell	113,280	64,031	57	1,672	107,077	18,520	10,308	11,673	7,608
Total	1,757,440	1,225,035	70	3,667	4,492,739	1,313,413	738,519	527,976	414,894

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TABLE No. 6— Continued.

COUNTIES.	Black oak	Poplar	Hickory	Maple	Basswood	Yellow pine	Gum	Hemlock	Buckeye
Clay	45,223	7,975	41,420	9,337	6,246	11,156	3,078	530	4,228
Leslie	61,173	84,694	38,351	61,933	54,961	9,852	27,942	44,501	11,002
Perry	25,393	49,806	40,731	25,899	24,603	13,789	4,530	8,189	20,726
Breathitt	21,482	68,501	56,316	18,159	14,162	12,720	12,716	11,073	6,279
Owsley	17,231	20,523	18,009	9,591	4,792	5,321	2,554	1,121	1,865
Lee	53,417	11,761	10,170	3,137	4,102	19,649	5,510	5,686	841
Wolfe	39,226	13,591	19,158	15,333	4,308	10,448	23,619	3,421	781
Estill	22,563	4,161	19,419	27,095	3,679	1,004	1,927	.....	985
Powell	19,111	7,636	6,333	4,156	2,213	9,283	2,352	4,749	.....
Total	304,819	268,648	249,907	174,640	119,066	93,222	84,128	79,270	46,707

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TABLE No. 6— Continued.

COUNTIES.	Sycamore	Cucumber	Ash	White Pine	Birch	Walnut	Locust	Scattered
Clay	.....	.....	1,188	.....	.....	382	.....	1,765
Leslie	11,190	12,392	4,738	.....	6,735	874	.....	3,710
Perry	2,774	.....	3,378	.....	808	2,288	.....	.....
Breathitt	.....	.....	1,767	.....	.....	283	.....	669
Owsley	.....	.....	1,460	.....	.....	705	.....	3,303
Lee	.....	.....	.....	.....	.....	.....	.....	690
Wolfe	1,423	1,452	899	9,488	.....	.....	.....	.....
Estill	34	.....	.....	.....	.....	.....	.....	.....
Powell	1,608	.....	188	.....	.....	.....	1,339	.....
Total	17,029	13,844	13,618	9,488	7,543	4,532	1,339	10,137

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TABLE No. 7.

Present annual output of logs in M. ft., board measure, shipped outside the county for manufacture—by counties and species.

UPPER KENTUCKY RIVER DISTRICT.

COUNTIES.	Total	White oak	Poplar	Chestnut oak	Basswood	Hemlock	Yellow pine	Chestnut	Black oak
Clay	12,468	5,117	2,872	3,154	850	115	.....	101	10
Leslie	30,945	13,420	10,964	956	1,992	1,461	924	723	273
Perry	12,721	4,794	6,090	764	371	97	166	350	48
Breathitt	9,174	3,814	3,888	764	163	70	108	236	.....
Owsley	3,340	955	500	1,105	140	.....	80	80	332
Lee	9,400	2,255	3,844	304	393	768	871	417	278
Wolfe	1,974	261	345	.....	70	810	.....	132	73
Estill	3,836	1,343	1,529	164	481	.....	13	5	42
Powell	34	13	17	.....	.....	.....	.....	.....	.....
Total	83,892	31,972	30,049	7,211	4,460	3,321	2,162	2,044	1,056

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TABLE No. 7—Continued.

COUNTIES.	Ash	Buckeye	White pine	Beech	Walnut	Cucumber	Maple	Gum	Scattered
Clay	.....	85	.....	.....	.....	.....	.....	.....	164
Leslie	116	.....	.....	.....	.....	116	.....	.....	.....
Perry	40	.....	.....	.....	1	.....	.....	.....	.....
Breathitt	12	25	.....	30	64	.....	.....	.....	.....
Owsley	124	8	.....	8	.....	.....	.....	.....	32
Lee	68	4	.....	60	50	.....	24	32	8
Wolfe	.....	.....	268	.....	.....	.....	15	.....	.....
Estill	8	148	.....	47	19	.....	24	9	4
Powell	.....	.....	.....	.....	4	.....	.....	.....	.....
Total	368	270	268	145	138	116	63	41	208

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TABLE No. 8.

Present annual output of lumber in M. ft., board measure (excluding lumber from logs cut in other counties)—by counties and species.

UPPER KENTUCKY RIVER DISTRICT.

COUNTIES.	Total	White oak	Poplar	Chestnut oak	Yellow pine	Chestnut	Black oak	Hickory	White pine
Clay	3,300	1,655	270	990	95	118	.....	.....	.....
Leslie	250	175	15	25	.....	15	10	.....	.....
Perry	2,543	2,242	68	144	15	.....	22	.....	.....
Breathitt	9,573	4,018	2,937	669	131	203	49	570	.....
Owsley	7,255	2,042	1,158	2,615	33	110	537	225	.....
Lee	13,775	4,981	2,194	75	2,890	1,495	760	639	.....
Wolfe	9,010	2,550	1,845	595	.....	640	190	300	1,625
Estill	3,002	562	1,016	221	423	190	407	35	.....
Powell	3,742	245	900	.....	1,637	13	115	150	.....
Total	52,450	18,470	10,403	5,334	5,224	2,784	2,090	1,919	1,625

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TABLE No. 8—Continued.

COUNTIES.	Hemlock	Basswood	Beech	Maple	Ash	Buckeye	Gum	Walnut	Sycamore	Scattered
Clay	.....	119	53	.....	.....	.....	.....	.....	.....	.....
Leslie	.....	10	.....	.....	.....	.....	.....	.....	.....	.....
Perry	.....	15	37	.....	.....	.....	.....	.....	.....	.....
Breathitt	.....	776	170	.....	50	.....	.....	.....	.....	.....
Owsley	.....	20	.....	205	105	205	.....	.....	.....	2
Lee	365	81	143	.....	.....	.....	160	.....	.....	.....
Wolfe	1,050	30	.....	.....	120	.....	20	45	.....	.....
Estill	.....	111	.....	.....	15	10	8	4	5	.....
Powell	82	297	75	176	.....	28	25	.....	.....	.....
Total	1,497	1,459	478	380	290	243	198	49	5	2

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TABLE No. 9.

Present annual output of miscellaneous material—by counties.

UPPER KENTUCKY RIVER DISTRICT.

COUNTIES.	SAWED TIES.			Total number.....	HEWED TIES.		
	White oak.....	Black oak.....	Softwoods.....		White oak.....	Black oak.....	Softwoods.....
Clay	21,000	.....	.....	21,000	18,600	.....	.....
Leslie	4,000	.....	.....	4,000	11,700	800	.....
Perry	36,590	.....	.....	36,590	140,510	.....	.....
Breathitt	282,895	1,770	1,000	285,665	431,585	8,930	2,000
Owsley	18,012	.....	1,000	19,012	34,850	.....	2,000
Lee	97,650	5,050	5,000	107,700	258,600	19,200	.....
Wolfe	124,400	37,600	.....	162,000	153,950	58,550	.....
Estill	51,125	9,200	500	60,825	399,500	93,000	10,500
Powell	56,050	19,800	12,000	87,850	102,547	50,800	33,500
Total	691,722	73,420	19,500	784,642	1,551,842	231,280	48,000

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TABLE No. 9—Continued.

COUNTIES.	Total number ..	Number of staves	Number of spokes	Number of poles	Number of posts	Shingles (M)...	Cordwood, cords	Tanbark, cords.
Clay	18,600	4,550,000	.....	.....	.....	.....	.....	100
Leslie	12,500	.....	.....	.....	.....	.....	.....	.....
Perry	140,510	663,000	.....	.....	.....	.....	.....	.....
Breathitt	442,515	2,635,000	.....	.....	.....	.....	494	380
Owsley	36,850	1,140,000	.....	.....	.....	.....	.....	.....
Lee	277,800	1,505,000	75,000	285	2,000	.....	326	760
Wolfe	212,500	2,005,000	750,000	.....	.....	.....	.....	272
Estill	503,000	388,000	.....	.....	.....	100	.....	810
Powell	186,847	.....	900,000	.....	5,200	.....	.....	.....
Total	1,831,122	12,886,000	1,725,000	285	7,200	100	820	2,322

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TABLE No. 10.

Present annual output of timber—by counties, computed in M. feet, board measure

UPPER KENTUCKY RIVER DISTRICT.

COUNTIES.	Total	Logs	Lumber	Ties	Spokes	Staves	Poles	Posts	Cordwood	Shingles
Clay	22,672	12,468	3,300	1,444	.....	5,460	.....	.....	.....	.....
Leslie	31,828	30,945	250	633	.....	.....	.....	.....	.....	.....
Perry	22,900	12,721	2,543	6,840	.....	796	.....	.....	.....	.....
Breathitt	49,379	9,174	9,573	27,223	.....	3,162	.....	.....	247	.....
Owsley	14,071	3,340	7,255	2,108	.....	1,368	.....	.....	.....	.....
Lee	40,009	9,400	13,775	14,702	90	1,806	43	30	163	.....
Wolfe	28,190	1,974	9,010	13,900	900	2,406	.....	.....	.....	.....
Estill	29,462	3,836	3,002	22,148	.....	466	.....	.....	.....	10
Powell	15,336	34	3,742	10,402	1,080	.....	.....	78	.....	.....
Total	253,847	83,892	52,450	99,400	2,070	15,464	43	108	410	10

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The Forest.

The forests of the upper Kentucky basin are on the border of the Appalachian region, but partake of the character of the adjoining central hardwood forest. They occupy moderate and steep slopes, but altitude and exposure do not exert as marked an influence as in typical Appalachian country. Differences in elevation and slope affect the forest composition to a slight extent, but the transitions are so slight that it is impossible to draw type lines. Nevertheless, certain more or less distinct forms appear as subtypes.

The forests of the whole region belong to the mixed hardwood type, although in some places pine may be found on the ridges or hemlock along the creeks. The characteristic form of the forest is an uneven-aged stand, irregular in density and mixed in composition with undergrowth largely composed of tree species. The chief species in virgin stands are white oak, yellow poplar, chestnut oak, beech and chestnut, in the order of their abundance, but in the present culled stand the poplar is much less important. In the lower counties white oak is largely culled out, and the black oaks and hickories become of greater relative importance. Maple, basswood,* buckeye, walnut and ash are the minor species among the hardwoods. The conifers are represented by yellow pine, white pine and hemlock, none of which are very abundant.

White oak is widely distributed and grows more or less in every subtype. It is most abundant on the lower slopes and coves, where it is often associated with beech, poplar, ash and maple. This beech-white oak forest is most common on the creeks flowing into the three forks of the Kentucky. White oak does not hold its own in the composition of this subtype after logging, because when the large white oak is taken out and the beech left to shade the ground, the young growth of the white oak does not thrive in competition with the more tolerant young beech. Where the railroads have penetrated the lower counties, white oak has been heavily cut and is giving place to the black oaks with which it is there commonly associated. Fire also favors the increase of black oaks in this mixture, because white oak is more easily killed by burning the woods, and its sprouting capacity is lower than that of the inferior black oak. White oak is often found on lower

*Linden or linn.

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slopes in nearly pure stands, especially in Clay and Owsley counties. Here the reproduction is excellent unless subjected to repeated and severe fires.

Virgin yellow poplar grows singly or in small groups on the lower slopes and coves. In the lower counties it has been nearly all removed and is now most abundant on the headwaters of the three forks. But even here there is little large poplar left, except on a few tracts owned or controlled by companies. Ash, walnut and basswood, with which the poplar is often associated, are also more abundant in the higher mountains. Poplar, because of its intolerance of shade, does not reproduce well in the small openings of a lightly culled forest, where the young growth of more tolerant species has the advantage. However, on old fields and clearings, if it receives plenty of light and is also protected from fire and cattle, second growth poplar is often found in pure stands, and is most noticeable in the lower counties where the cutting has been the earliest and heaviest. It is especially abundant and thrifty in the eastern part of Powell County.

The hickories, represented chiefly by the shagbark, pignut and mockernut, are widely distributed throughout the region. They grow in all of the subtypes, and are usually associated with the oaks. Since they reproduce well, they maintain and often increase their proportion in the stand after logging, and also come in quickly on abandoned fields. The difficulty of handling hickory on the rivers has hindered its exploitation.

Chestnut and chestnut oak are common trees on the upper slopes and ridges. In mixture with black and scarlet oak, other oaks and hickory, they characterize an important subtype of wide distribution in the region. Much of the old chestnut is overmature and decaying rapidly, but the young growth is sound and thrifty. On the sandy ridges between the waters of Station Camp in Jackson County, the subtype is modified by the presence of yellow pine, sometimes in mixture with the chestnut and oak, sometimes in pure stands. On the ridge country where eastern Powell County, western Wolfe and northern Estill join, white pine is associated with chestnut, black and scarlet oak and yellow pine. All species of the upper slope and ridge reproduce well except where fires are severe. They suffer more from windfall and disease than the more favorably situated trees because of a lower vitality due to exposed situation and thinness of the soil.

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Forest Management.

The upper Kentucky watershed, because of the non-agricultural character of its steep and rocky slopes, and the value of its native hardwoods, should be a very important wood producing region of the future. In general, saw timber should be the main object of management, with ties and smaller products from the poorest situations or from thinnings. It is important that intelligent and farsighted methods be adopted soon, before the forest capital has been exhausted by careless handling as it has been in some parts of the State. The present system of culling out the most valuable species and leaving only the inferior trees to seed up the openings is bound to result in the deterioration of the forest. This deterioration is hastened by the general indifference to the damage done by annual fires and unrestricted grazing.

A modification of what is known as the selection system is advised for this type of forest. This consists in cutting to a diameter limit determined by a study of local conditions. The aim in selecting this limit is to leave thrifty young trees which have not yet reached the point where they will yield the greatest profit. At the same time, reproduction should be providid for by leaving occasional trees above the diameter limit for seed. Theoretically, the diameter limit in cutting should be high for valuable species and lower for the less valuable, so as to improve the composition of the forest. Poplar, walnut and white oak should be favored in this way wherever possible. As long as market conditions make it impossible to handle inferior species except at a loss, this plan cannot be carried out as completely as the good of the forest demands. But unmarketable woods should be used for home consumption, since it will be profitable to use less durable material around the farm, even considering the extra labor to replace it, for the sake of permanently improving the woodland and saving the most valuable timber for market. It is also possible to extend the usefulness of the inferior woods by treating them with creosote, a simple and inexpensive process. Black oak and beech, especially, are made much more durable by such treatment, and should soon be in demand for ties here, as they are now in other parts of the State.

An awakening of public sentiment to the value of fire protection and grazing restriction is needed. Fire is especially destructive where the forest areas are most extensive

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and where the ridges broaden out in dry sandy stretches. Grazing also destroys young growth, especially on little clearings where such valuable species as poplar, ash and basswood are devoured by the browsing animals as soon as they get started. All the lower counties in this district can well afford to avail themselves of the provisions of the stock law by which counties or parts of counties may require every man to fence his own stock. Probably Perry and Leslie counties, and possibly Breathitt, are not ready for such a law as yet, since pasture land is scanty and the amount of stock is limited by the scarcity of winter feed. In these three counties, then, the damage done by stock, may, at present, be more than offset by the value of the grazing industry. Little can be done anywhere to prevent the evils of fire and grazing until the local population realizes the damage being done. An important duty of a State Forester would be to stir up public sentiment in favor of fire protection and a stock law.

County Descriptions.

Clay County.—Clay County comprises about 292,480 acres, and is located on the headwaters of the South Fork of the Kentucky River. The southern part is very rough, like Perry and Leslie counties, but north of Manchester the ridges become lower and broader, and the valleys grow wider, especially in the western part of the county.

Outside of the waterways which are available for floating timber, the transportation facilities are limited to the wagon roads, which are in need of more attention. It is about twenty miles from Manchester to the nearest railroad stations, London and Barbourville, on two divisions of the Louisville & Nashville Railroad. Logs, ties and staves are the principal forest products of the county. In addition, fourteen small mills saw rough lumber largely for local use. The logs and most of the ties are floated out in seasons of flood, while the staves and a few of the ties are hauled to the railroad. There is little demand for black oak, beech or other inferior timber.

White oak is unusually abundant and thrifty in this county, and although it has been heavily cut, it still remains a large part of the more valuable timber. The greatest damage to the stand has been through repeated cuttings, and from fires and grazing. The chances for successful forest manage-

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ment are good. The excellent natural reproduction of white oak, poplar and other valuable species, makes this true, together with the rapid growth these trees make on the fertile soil which here extends even to the steeper slopes. The most important measure to be taken, outside of protection from fire and grazing, is the institution of systematic cutting, taking out only mature and defective trees, and leaving the forest undisturbed until the younger timber has reached a size when second cutting is warranted.

LESLIE COUNTY.—Leslie County has an area of 254,080 acres. It is located on the headwaters of the Middle Fork of the Kentucky River, west of Perry County, which it resembles in many respects. The ridges are rough and broken, and are separated by narrow V-shaped valleys. For the most part the slopes are so steep that erosion speedily sets in and the soil is washed away when they are cleared.

Transportation facilities are largely limited to the Middle Fork and its tributary creeks, as no railroad penetrates the county. London, on the Louisville & Nashville, is the nearest railroad station. fifty-five miles from Hyden, the county seat. The roads should be improved, as they are often impassable in bad weather.

Logging has been carried on somewhat more extensively in Leslie than in Perry County, but a large amount of valuable timber still remains. At present only high-grade saw timber and white oak ties can be profitably marketed, because of the difficulty of transportation. Five small saw-mills saw for local use, but the great part of the timber output goes to the large saw mills on the Kentucky River. Small material, woods that can not be readily floated, bark and other minor products, will not be utilized until railroad facilities are better. Until that time, protection of young timber from fire and from careless logging is the chief measure to be taken in the interest of the forests. The development of the coal resources of the county, together with the improvements in transportation facilities required by the mining industry, will stimulate the market for all classes of timber, and make forest management increasingly profitable.

PERRY COUNTY.—Perry County, with an area of about 214,400 acres, is located on the headwaters of the North Fork of the Kentucky River, the southwestern section including also a part of the drainage basin of the Middle Fork. The

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topography is very rough, with steep, narrow ridges rising 600 feet above the swift-flowing mountain streams. The population is scanty, and depends for a livelihood upon little stretches of farm land along the creeks and upon the timber of the hillsides and coves. The country is largely underlaid by coal, which has not yet been mined except in a small way for local use. The chief means of transportation is the water route afforded by the North and Middle forks and their tributaries. The nearest railroad station is Jackson, which is forty miles from Hazard, the county seat. The roads for the most part follow the creek beds.

Perry County is still rich in timber resources. Above Hazard, poplar is the only timber that has been logged extensively, and a few large bodies of that still remain untouched. Below Hazard, the poplar is gone except for a large quantity of second growth and culls, and now the white oak, chestnut and chestnut oak is being extensively logged. Besides the trade in round logs and ties, a considerable business is done on the North Fork in getting out square timbers of selected white oak for export through Quebec.

With the present transportation facilities, the methods of forest management must necessarily be very rough because of the difficulty of utilizing the inferior woods. Care in logging to leave valuable species and to prevent injury and waste of young growth, together with fire protection, are the principal measures that can be undertaken at once. There is a great opportunity in forestry in this county for the mining companies which will begin operations with the introduction of a railroad, if they will handle their property from the start upon a conservative basis.

Breathitt County.—The topography of Breathitt County, which has an area of 307,200 acres, is rough and broken, steep hills and ridges alternating with narrow valleys. The soil is mostly a shaley clay which is fairly productive when newly cleared, but the steep hillsides wash badly and lose much of their fertility with a few years of cultivation.

Transportation facilities for forest products are fairly good. Both the North and Middle forks of the Kentucky River traverse the county. In addition, two large creeks, Troublesome and Quicksand, the latter running through the county for over 60 miles, empty into the North Fork above Jackson, the county seat. These four streams furnish over

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120 miles of rafting water to the county. The L. & E. Railroad terminates at Jackson, and the Ohio & Kentucky Railroad runs from there to Cannel City in Morgan County. The wagon roads are in great need of improvement, so that hauling, especially on the main thoroughfares, may be cheapened.

Forests still cover 80 per cent of the total area of the county, in spite of the large amount of timber cut in the last few years. Little land is in cultivation, for nearly all the people earn most of their living from timber work. There is much first-class timber still standing in the eastern part of the county. The best poplar and white oak, however, belong to companies who are holding it for better prices or for improved railroad facilities. With these exceptions, most of the timber is of second quality, and the greater part of the floating timber and oak suitable for staves has been cut, as well as vast amounts of tie material. Fire has destroyed much timber, especially on large holdings, but because of the fences around clearings, fires are not annually prevalent.

The first step for Breathitt County in the direction of better management of the forests should be road improvement. This can be accomplished as soon as there is aroused a general feeling that good roads are needed.

Owsley County.—Owsley County, with an area of 131,840 acres, lies below Clay County on the South Fork of the Kentucky River. In topography it resembles the country north of it, except that it is not quite as rough. In the western part there is a region on the waters of Sturgeon Creek, a stream which flows into the Kentucky River below the South Fork, where the ridges are lower than in the rest of the county, and have flat, broad summits. The soil, like that of Clay County, is fairly fertile and well adapted to rapid forest growth.

Timber can be floated down South Fork and Sturgeon Creek, and the former is also navigable for barges and small craft. For railroad transportation, the county has only two lines which pass through Lee County on the north, and, in the county itself, a narrow gauge lumber road which runs from Tallega on the Lexington & Eastern Railroad to Lerose Post Office.

There are about 16 small mills and one large mill in this county, sawing lumber and ties, and many logs are rafted

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down the river. In the western part stave making is an important industry. About 40 per cent of the land has been cleared for cultivation, and although very little of the cleared land has been abandoned permanently, fields are often allowed to be idle for five or ten years and are then cleaned up and used again. Probably 50 per cent of the land should be kept permanently in forest. Extensive culling of the better species has led to an undue proportion of the inferior oaks which have been very little used. Nevertheless, the valuable species, especially white oak and poplar, seem to be holding their own in the young growth, and unless subjected to severe fires and overgrazing, will regain their original importance in the stand. The small proportion of beech, which is often a serious competitor of the white oak on lower slopes, partly accounts for the good white oak reproduction here and in Clay County. It is important that fire protection and conservative cutting be instituted, so that the promising young growth may be protected and improved.

Lee County.—In Lee County which contains approximately 128,000 acres, the northern half is rough and broken, and all the valleys of the larger streams are bordered by precipitous sandstone cliffs. The southern part of the county is not so rough, and there are few of the cliffs. About 30 per cent of this county has been cleared for farming, though not more than 10 per cent is in annual crops. Much of the land has been worn out and abandoned to summer pasture, or is growing up again in woods. The soil throughout the county, excepting small areas of narrow bottomland, is poor, and, when cleared, is subject to erosion, so that much of the land is better fitted for growing timber than any other crop. The roads of Lee County are worked by the old system of overseers and road hands, which does not seem to be very successful. Few cross drains are made on the steep grades and the water is generally allowed to run in the road from the top to the bottom of the hills. With improvement in the roads, transportation will be cheaper and the county more prosperous.

The three forks of the Kentucky River which come together close to Beattyville, together with Sturgeon Creek in the south and Miller Creek in the north, form a system of waterways over which the greater part of the floatable timber has been taken from the county. Two lines of railroad,

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the Lexington & Eastern and the Louisville & Atlantic, which connect near Beattyville, with the help of several logging roads and tramways, have tended to complete the removal of all the first-class timber.

The present stand, averaging about 1,000 board feet per acre, consists chiefly of the inferior species. On Sturgeon Creek and Ross Creek there is still some good timber, and the yellow pine of this region is known at all milling points on the Kentucky River. There are still a few tracts of good timber that run from 5,000 to 7,000 feet per acre, but they will be cut in the next three or four years. Second growth, unaffected by fire, usually contains as large a proportion of white oak and poplar as the original forest; but on burned-over land a smaller proportion of white oak and poplar remains after each burning, and a large amount of the comparatively worthless species, black oaks, red maple, and hickory. If fire is controlled the future supply of timber will take care of itself.

Wolfe County.—Wolfe County has an approximate area of 153,000 acres. It is drained by Red River, which heads in the northern part of the county, and by tributaries of the North Fork, which forms its southern boundary. The west and more particularly the northwest section is very rough, with the creeks flowing in deep ravines bordered by precipitous cliffs. To the east, the topography becomes more gentle, and the soil is deeper and more fertile.

Two railroads, the Lexington and Eastern, and the Ohio and Kentucky, cross this country on the western and eastern extremities. The first is connected with Campton, the county seat, by a narrow gauge line. Water transportation is provided by the two rivers.

The forests are being rapidly depleted of their valuable timber, which is being exported in the log, sawed by the fifteen local mills, or used in tie and stave making. The present stand, which now averages about 2,500 board feet per acre, will be exhausted in from eight to ten years if the present rate of cutting is not accelerated. Heavy damage has been done by fires in the northwestern part of the county. It is important that these be checked, as a large proportion of this section should be permanently devoted to timber production. White pine, which in virgin stands is associated with

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hardwoods, reproduces very well on these cut-over lands, often in mixture with yellow pine. It should be an important and valuable tree in forest management.

ESTILL COUNTY.—Estill County, with an area of 163,200 acres, is the last county bordering on the Kentucky River east of the bluegrass region. With the exception of the comparatively large creek and river bottoms and the small amount of limestone land along its western border, the soil is poor. Nearly 45 per cent of the county has been cleared for farming. During the past season there was a considerable increase in the amount of land cultivated, on account of the depression in the timber business, and there is probably a larger acreage in corn this year than ever before. Much of the land, especially in the northern part of the county, which has once been cleared and cultivated, is now slowly returning to forest. Probably 30 per cent of the area of the county should be retained permanently as forest land. The roads are worked by the people under overseers, and although better than in the rougher counties, they leave much to be desired.

No part of this county is over ten miles from either rail or water transportation, and as a consequence there is now very little good timber left standing. A few small tracts are left, on which the timber runs as high as from 4,000 to 6,000 board feet per acre, but the greater part of this will soon be exploited. The bulk of the forest has been heavily culled and now consists of beech, sugar maple, black oak and hickory, running from 250 to 1,500 feet per acre. In the northern part of the county much of the timber was cut off clean 30 to 50 years ago to furnish three iron furnaces with charcoal. Except where this land has been cleared, there is now an even-aged stand of black oak, white oak, chestnut and hickory. Most of it has been thoroughly culled for ties so that now little merchantable timber is standing. Probably 10 per cent of this second growth is hickory, which, in a comparatively few years, will be very valuable for handle stock.

Fire protection and a stock law are badly needed in Estill County to improve its forest conditions. The greater part of the forest growth is small, and is therefore susceptible to injury by fire. There is no doubt that the proportion of the more valuable species is less than in the original forest. There is now very little range in the woods for cattle and

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practically no mast for the hogs, so that the owners of stock as well as the owners of the woodland would profit greatly by the enforced fencing of all animals. Many land owners now keep their own stock under fence, besides fencing against their neighbors' stock which roams the road. Moreover, the gates along the county highways, made necessary by the present system, are a public nuisance, and everyone who uses the roads will be benefitted by their removal.

POWELL COUNTY.—Powell County, with an area of 113,280 acres, is located on Red River below Wolfe County. The eastern part is rough, like the adjoining section of Wolfe, but toward the west the ridges are lower, with more moderate slopes, and the bottomland along the river is much wider.

Red River is not navigable, but will float logs and ties. Its valley is followed by the Lexington and Eastern Railroad, which provides good transportation facilities. The dirt roads are maintained by the militia system, and while the roads along the larger valleys are in fair condition, in the mountains much improvement is needed. Clay City, with two planing mills, a large sawmill, a spoke factory and several tie yards, is the lumber center. More than a dozen small sawmills are scattered throughout the county. Few good stands of virgin timber remain and these are in the most inaccessible situations. In the southern part of the county, near Estill Furnace, the original timber was cut clear for charcoal, and even-aged second growth stands have resulted. Second-growth poplar is abundant on some of the lower slopes and should make valuable saw-timber in ten or twenty years if properly thinned and protected. The rapidity with which locust is springing up in the old fields and cut-over areas suggests a profitable future in growing posts for the market. Fire has killed large bodies of promising young timber and must be prevented.

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UPPER LICKING RIVER DISTRICT.

General Conditions.

Of the five counties embraced in this group, four of them, Morgan, Magoffin, Menifee and Rowan, are located on the upper waters of Licking River. The remaining county, Lewis, is included because it is more similar to the counties of this group than to those of any other, although it is drained, not by Licking River, but by smaller streams that empty directly into the Ohio. This district is on the border of the eastern coal fields, and is bounded on the west by the bluegrass country. Lewis County, with the western part of Rowan and Menifee, is underlaid by limestone and sand-stone of the sub-carboniferous period, with outcroppings of older formations along the western border and in the valley of Salt Lick. The remaining territory is underlaid by the coal measures where sandstone and shales predominate and valuable coal seams, both bituminous and cannel, are found. While this may be called a mountainous section, the elevations are moderate, and the valleys are from 700 to 1,000 feet above sea level, with the ridge crests rising from 300 to 500 feet higher. While the general character of the country is similar to the upper Kentucky region, the topography on the whole is less rugged and there is more float land on the ridges and along the streams. The soil varies in quality with the underlying rock, and although usually deep and fertile in the valleys, it is thin and liable to erosion on the steeper slopes. The drainage system is well developed and there is practically no swamp land.

With the exception of comparatively few large tracts held by lumber, speculating or mining companies, the land is owned by the residents in holdings of from 100 to 400 acres. In many places, notably through portions of Menifee and Morgan counties, these small landowners have sold their mineral rights to mining companies and the timber privileges to lumbermen, retaining only the land itself. The average assessed value of land in the five counties varies from $2.70 in Rowan to $7.80 in Magoffin, while the rate of taxation is close to one per cent. The real value of land is often five times as much as the valuation fixed by the assessor, and taxation is not enough of a burden to hinder forest management. Woodland is usually assessed at two to four dollars per acre, and is considered less valuable than farm land.

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About forty-three per cent of the district is cleared for cultivation. In general, the land has been used without foresight. Steep slopes are cleared, a few crops of corn grown upon them before the soil washes out, then more woodland is cleared and the process repeated until the land is almost worthless for either agricultural or forest crops. About half of the region is absolute forest land and should be kept permanently in forest.

No navigable river enters this region, although the Ohio skirts the northern boundary of Lewis County. Licking River, which flows through the middle of the district, together with its branches, is used for floating timber and at high water is navigable for barges and small craft. Railroad transportation is undeveloped. The Chesapeake & Ohio, with several feeders, serves the lower counties, while on the south, the Ohio & Kentucky, which runs from Cannel City to Jackson, taps Morgan County. The wagon roads are supported by the militia system, with a little aid from the general fund in some of the counties.

A large amount of timber is sawed by small portable mills, especially in the lower counties, both for local use and for shipment. The chief markets for floated timber are at Yale, Farmers, Salt Lick and other points on Licking River. Ties are floated or hauled to the most convenient railroad stations. Shipment of logs, staves and lumber usually go to Cincinnati, Louisville and Eastern markets.

Present Stand and Output of Forest Products.

This region of Kentucky is still enriched by a large quantity of timber, although all of the better grades have been taken out except in the most inaccessible parts. About 57 per cent of the land is covered with some kind of tree growth, making nearly 587,000 acres classed as forest land. The total stand of timber above twelve inches in diameter at breast-height is estimated to be nearly 1,300,000,000 board feet, an average stand of about 2,200 board feet per acre. More than one-quarter of this is white oak, and the rest is black oak, chestnut oak, chestnut, poplar and beech, in the order named. The heaviest timber is found in Magoffin County, where the average stand is nearly 4,000 board feet per acre, while in Lewis County the average is less than 1,200 board feet. A large part of the whole area is heavily culled and will average less than 1,000 board feet.

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TABLE No. 11.

Estimated amount of standing timber in thousand feet, board measure—by counties and species.

UPPER LICKING RIVER DISTRICT.

COUNTIES.	Total area acres	Area forested acres	Per cent of forest	Average stand per acre, bd. ft.	Total	White oak	Black oak	Chestnut oak
Magoffin	192,000	93,091	48	3,823	355,887	162,832	37,964	52,282
Morgan	240,000	115,588	48	2,679	309,695	74,621	39,753	42,889
Menefee	127,360	84,884	67	2,656	225,462	46,927	23,243	33,070
Rowan	172,800	112,406	65	1,777	199,771	43,421	58,216	16,143
Lewis	304,640	180,856	59	1,138	205,842	28,625	72,008	13,235
Total	1,036,800	586,825	57	2,200	1,296,657	357,426	231,184	157,619

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TABLE No. 11—Continued.

COUNTIES.	Chestnut	Poplar	Beech	Hickory	Yellow pine	Maple	Gum	Basswood
Magoffin	16,282	24,750	18,980	15,734	3,746	7,785	4,344	8,556
Morgan	23,163	20,689	23,582	21,107	4,273	16,000	26,440	5,456
Monefee	16,267	24,353	13,693	9,082	11,292	6,884	6,370	3,568
Rowan	18,765	5,556	9,902	15,367	17,573	4,426	1,379	3,650
Lewis	27,074	9,463	16,642	16,031	4,731	6,045	1,621	5,246
Total	101,551	84,811	82,799	77,321	41,615	41 140	40,154	26,476

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TABLE No. 11—Continued.

COUNTIES.	Hemlock	Sycamore	White pine	Ash	Locust	Cucumber	Buckeye	Scattered
Magoffin	.....	1,632	.....	.....	.....	.....	.....	.....
Morgan	4,079	2,111	.....	3,010	283	1,350	889	.....
Menefee	17,013	3,446	6,019	301	1,934	.....	.....	.....
Rowan	.....	1,989	.....	689	.....	.....	.....	2,695
Lewis	.....	437	.....	1,749	437	.....	.....	2,498
Total	21,092	11,615	6,019	5,749	2,654	1,350	889	5,193

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TABLE No. 12.

Present annual output of logs in M. feet, board measure, shipped outside the county for manufacture—by counties and species.

UPPER LICKING RIVER DISTRICT.

COUNTIES.	Totals	White oak	Poplar	Chestnut oak	Hemlock	Black oak	Yellow pine
Magoffin	6,514	4,659	1,088	.....	.....	200	292
Morgan	21,855	8,825	4,992	2,590	1,060	1,070	825
Menefee	1,665	.....	405	.....	610	.....	.....
Rowan	.....	.....	.....	.....	.....	.....	.....
Lewis	.....	.....	.....	.....	.....	.....	.....
Total	30,034	13,484	6,485	2,590	1,670	1,270	1,117

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TABLE No. 12—Continued.

COUNTIES.	Chestnut	Beech	Basswood	White pine	Maple	Ash	Cucumber
Magoffin	50	50	100	.....	.....	75	.....
Morgan	808	660	535	.....	295	195	.....
Menefee	200	.....	50	350	25	.....	25
Rowan	.....	.....	.....	.....	.....	.....	.....
Lewis	.....	.....	.....	.....	.....	.....	.....
Total	1,058	710	685	350	320	270	25

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TABLE No. 13.

Present annual output of lumber in M. feet, board measure (excluding lumber from logs cut in other counties)—by counties and species.

UPPER LICKING RIVER DISTRICT.

COUNTIES.	Totals	White oak	Chestnut oak	Poplar	Yellow pine	Black oak	Chestnut	Hickory	Hemlock	Beech
Magoffin	1,540	655	.....	220	175	450	30	.....	10	.....
Morgan	2,350	1,055	40	750	25	60	70	300	.....	.....
Menefee	13,860	4,760	2,755	1,670	1,570	610	380	200	460	120
Rowan	17,609	8,182	1,731	1,516	2,001	1,280	628	560	530	210
Lewis	7,330	2,557	536	426	607	992	771	266	.....	626
Total	42,689	17,209	5,062	4,582	4,378	3,392	1,879	1,326	1,000	956

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TABLE No. 13—Continued.

COUNTIES.	White pine	Basswood	Maple	Ash	Gum	Sycamore	Walnut	Elm	Scattered
Magoffin	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morgan	.....	50	.....	.....	.....	.....	.....	.....	.....
Menefee	900	285	.....	120	30	.....	.....	.....	.....
Rowan	.....	230	141	138	214	110	106	.....	33
Lewis	.....	88	201	30	.....	83	.....	79	68
Total	900	653	342	288	244	193	105	79	101

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TABLE No. 14.

Present annual output of miscellaneous material— by counties.

UPPER LICKING RIVER DISTRICT.

COUNTIES.	SAWED TIES.			Total number ..	HEWED TIES.			Total number ..
	White oak ..	Black oak	Soft-woods* .		White oak	Black oak ..	Soft-woods* .	
Magoffin	56,350	7,750	.....	64,100	120,250	5,125	6,125	131,500
Morgan	93,250	5,000	10,250	108,500	308,350	25,000	250	333,600
Menefee	57,500	6,500	4,000	68,000	36,500	.....	45,000	81,500
Rowan	59,275	.....	1,500	60,775	336,375	15,000	26,500	377,875
Lewis	60,880	6,770	62,825	130,475	277,900	5,900	116,700	400,500
Total	327,255	26,020	78,575	431,850	1,079,375	51,025	194,575	1,324,975

*A large part of the ties classed as softwood are chestnut in this district.

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TABLE No. 14—Continued.

COUNTIES.	Number of staves	Number of heading	Number of spokes	Number of poles	Number of posts	Hoops (M)	Shingles (M)	Tanbark cords
Magoffin	3,010,000	500,000	.....	.....	.....	.....	.....	150
Morgan	2,925,000	.....	41,660	80	.....	.....	1,000	1,750
Menefee	200,000	.....	10,000	.....	.....	.....	.....	.....
Rowan	150,000	428,500	500,000	.....	.....	.....	3,600	1,000
Lewis	100,000	639,000	3,398,000	.....	3,200	210	200	635
Total	6,385,000	1,567,500	3,949,660	80	3,200	210	4,800	3,535

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TABLE No. 15.

Present annual output of timber—by counties, computed in M. feet, board measure.

UPPER LICKING RIVER DISTRICT.

COUNTIES.	Total	Logs	Lumber	Ties	Spokes	Staves	Poles	Posts	Heading	Shingles	Hoops
Magoffin	19,763	6,514	1,540	7,397	.....	3,612	..	..	700	.....	.....
Morgan	44,838	21,855	2,350	16,961	50	3,510	12	..	.....	100	.....
Menefee	21,304	1,665	13,860	5,527	12	240	..	..	.....	.....	.....
Rowan	36,490	.....	17,609	17,141	600	180	..	..	600	360	.....
Lewis	32,930	.....	7,330	20,369	4,078	120	..	48	895	20	70
Total	155,325	30,034	42,689	67,395	4,740	7,662	12	48	2,195	480	70

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The total output of this district from July, 1907, to July 1908, was more than 150 million board feet, or nearly one-eighth of the total stand. This is about the highest point that lumber output will reach, and a decline must soon begin. Nearly two million ties were taken out last year, or nearly one-third of the entire timber production. Seventy-three million feet of logs and lumber, together with hoops and cooperage stock, make up practically all of the remaining two-thirds. Morgan County supplies the largest share, because it contains more timber than Menifee, or the lower counties, and is more accessible than Magoffin. The estimated value to this district of its timber products is $2,800,000, or $200 to the average family. These figures show the importance of putting the remaining forest land in such condition that the forest production may be maintained on a permanent basis.

Detailed figures in regard to present stand and output are shown in Tables 11 to 15.

The Forest.

The forests of this district are of the same type as those in the Upper Kentucky River region. Oak, beech and hickory are found on the slopes, with scattering yellow poplar and basswood*, while chestnut oak, chestnut and pine are the characteristic trees of the ridges. The less important species, maple, buckeye, walnut, ash and hemlock are similarly distributed in this region. Although the type of forest in the two regions is the same, the forest of the Upper Licking district have been more heavily cut and longer exposed to the interference of man. There is scarcely any virgin forest left. The most valuable species have been thoroughly culled out, and the second growth is older and of greater relative importance. The black oaks and beeches are comparatively greater in amount and are becoming more important commercially. White oak, although still of great importance, is suffering from competition with the inferior species under conditions which give the advantage to its rivals. The old-field type covers a large area and has reached more advanced stages in its development. Besides sassafras and various shrubs, hickory, black oak, locust and pine are characteristic invaders of the abandoned fields. The factors of fire and

*Linden or linn.

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grazing are perhaps no more serious here than in the upper Kentucky country, but have been operative over a longer period.

Forest Management.

Management here should be along the same lines as recommended for the Upper Kentucky district, but as market conditions are better, more intensive methods can be applied. The cutting should be done according to the selection system, taking out only trees above a diameter limit which is selected so as to leave thrifty young trees which are still growing so rapidly that if cut now, they would not yield the greatest profit. At the same time the composition of the forest may be improved by cutting the inferior species closer, leaving none to seed up the openings. For the best species a higher diameter limit should be used, and a few good seed trees left on every acre. The quality of the stand may also be improved by including with the trees to be cut, all stag-headed, badly-formed and decaying individuals if they can be marketed without loss. Reproduction is good in this region, and there should be no difficulty in securing suitable young growth if proper seed trees are left and fire and stock kept out. The adoption of a law prohibiting owners from allowing their stock to run loose would be of great benefit to these counties. Co-operation among the citizens in preventing and extinguishing fires is also essential.

County Description.

Magoffin County.—Magoffin County is located on the headwaters of Licking River, which drains all the county with the exception of a short strip on the eastern border that belongs to the Big Sandy watershed. It contains approximately 192,000 acres. In topography it resembles Morgan County and is not as rough as the corresponding region on the Upper Kentucky valley. The main creeks are bordered by bottomlands, often a quarter of a mile wide, and the valley slopes, which usually rise about 500 feet to the ridge crests, are, on the whole, of only moderate steepness.

Except for the Licking River System, on which timber is floated, the transportation facilities are very limited. The nearest railroad stations are Prestonburg and Paintsville on the Chesapeake & Ohio, and Cannel City, Adele and Lee

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City on the Ohio & Kentucky Railroad. Logs, cross-ties and staves are the chief forest products. About ten saw mills operate within the county and saw lumber largely for local use and railroad ties for the market. Heavy inroads have been made upon the supply of high grade timber and the best stands are found now towards the south, on the headwaters of the river.

Nearly 15 per cent of the land has been cleared for cultivation and subsequently abandoned. About 48 per cent remains in forest. Perhaps half the county is absolute forest land, including the larger part of the old fields. The ownership of surface rights, timber privileges and mineral rights has been to some extent separated and this division of interests has not encouraged the best use of soil and timber resources. The timber owner has logged without reference to the effect on the soil, while the landowner has allowed the young growth to burn over without regard to its future value to the mining industry. The restriction of cutting to mature timber, together with fire protection, should be instituted at once. Such measures will tend to conserve the forests until more intensive management can be introduced with the development of coal mining and a consequent market for inferior species and small material.

Morgan County.—The area of Morgan County is about 240,000 acres. It is located in Licking River valley below Magoffin, and with the exception of small portions on the east and south, it is drained by the tributaries of that river. The topography is mountainous, with narrow ridges rising five hundred feet above the stream beds. The soil of the northwest corner of the county, known as the "flatwoods" country, is thin and poor and is an exception to the good quality of soil that prevails elsewhere.

Forest products are shipped mainly by being floated down Licking River and its branches. Three railroads, one a narrow gauge line, touch as many sides of the county and carry out quantities of lumber, wagon stock, staves and ties. Only about ten sawmills operate in this county, as a larger part of the timber output consists of ties and logs. The latter go, for the most part, to sawmills at Farmers, Yale, Salt Lick and other points on Licking River. With the exception of a small region near Cannel City the coal mining industry has

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not developed far enough to produce a market for small material.

If conservative cutting is instituted at once, together with protection from fire, the problem of maintaining a very productive forest will be simple. The natural regeneration of oak and other species is good and market conditions will doubtless improve. With the exploitation of the coal deposits, the demand for props should make intensive methods of forestry profitable.

MENIFEE COUNTY.—Menifee County lies south of Rowan on the opposite side of Licking River and below Morgan County. It has an approximate area of 127,400 acres. The rough valleys lie between broad ridges and often the streams are bordered by abrupt cliffs. More than half the farm land is located on the ridges rather than in the bottoms. The southern part of this county properly belongs to the Kentucky River watershed, as it drains southward into Red River, while the northern part is drained by tributaries of Licking River. A standard gauge railroad connects Rothwell, in Menifee County, with the main line of the Chesapeake & Ohio at Mt. Sterling, and, in addition, several narrow gauge roads tap different parts of the county. Licking and Red rivers, with their tributaries, afford means of floating timber.

The eastern part of the county is largely cleared, but there remains altogether about 67 per cent in woods. Probably about 60 per cent of the area of the county should be kept permanently in forest. This would include the abandoned fields now too poor for agriculture and would exclude the agricultural land which is now in timber. In the second growth, black oak is most abundant and there are also good stands of yellow pine and small patches of locust, especially on old fields. The virgin timber supply has been largely exhausted by the heavy trade in lumber and ties. The damage from fire on the higher ridge land has been excessive. The second growth, commonly regarded as valueless, has suffered severely, and, unless fires can be checked, its productivity will be entirely destroyed. Where the land can be used profitably only for timber, it is important that young growth be protected and improved. Fire should be kept out, grazing restricted and trees of inferior species removed.

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ROWAN COUNTY.—Rowan County has an area of 172,800 acres and is located on the western edge of the coal fields next to the bluegrass region. Licking River, with its tributaries, the chief of which is Triplett Creek, drains the county and flows on its southwestern boundary line. The topography is rough, with rocky hills rising from 200 to 300 feet above cliff-bordered streams. The valleys are narrow and do not contain much farm land.

The greater part of the county is within easy hauling distance of a railroad. The Chesapeake & Ohio runs through the central portion and a line is under construction from Morehead south into Morgan County. Timber is floated down Licking River and its tributaries. The wagon roads supported by the militia system are capable of improvement. Nearly half of Rowan County is in the hands of non-residents and a large part of this is timberland. Lumbering is the most important industry, with farming secondary. There are three large sawmills in operation and fourteen small portable mills. Cross-tie cutting is an important industry with an output from July, 1907, to July, 1908, of 1,750,000 ties.

The forest cover is made up for the most part of oak, chestnut and pine. In the rougher sections hemlock and beech are common. Pine is found on the ridges and upper slopes and has come in abundantly on old fields, especially in the western part, where dense sapling stands are frequent. A few tracts of virgin timber remain in inaccessible places on the heads of streams.

In order to get the best yield from second growth pine, the stands should be thinned out when overcrowding begins. The hardwoods should be improved by careful cutting aimed to favor the better species. Protection from fire and overgrazing is necessary if Rowan is to occupy the position that it should as a timber-producing county.

LEWIS COUNTY.—Lewis County, with an area of 304,640 acres, borders on the Ohio River just above where it flows into the bluegrass region. The entire county drains northward into the Ohio, with Kinniconick Creek and Salt Lick as the chief streams. The topography is moderately rough, particularly toward the east and south. The northern part of the county has good water and rail transportation facilities, as the Ohio River is followed by the main line of the Chesapeake & Ohio Railroad. A branch line also extends from

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Garrison to the northeast corner, up the valley of Kinnicoonick Creek.

With the exception of scattered woodlots that are still covered with good timber, the forests have been so heavily culled that now for the most part only tie timber remains. There is considerable beech along the streams, but this is being rapidly removed since the market for beech lumber and ties has been developed. About twenty portable sawmills are in operation and a large number of sawed and hewed ties are produced annually. Ties are hauled ten to twenty-five miles to the various shipping points, and much expense would be saved if the roads were kept in better condition.

After protection is provided from fire and grazing, the most important measure for forest conservation is the restriction of tie cutting to the inferior species, at least for a while, so that the best trees on every acre will be left to bear seed and to produce saw-timber. In this way the increase of inferior species may be checked and more valuable material produced. Poplar, white oak and red and black oaks should be favored in the order named, over other black oaks and beech. Locust, which is coming in a little in the western part, may there be profitably handled for posts.

LOWER LICKING RIVER DISTRICT.

General Conditions.

The Lower Licking region of Kentucky, as considered in this study, is located in the north central part of the State and comprises the following eleven counties: Montgomery, Bath, Fleming, Mason, Nicholas, Robertson, Bracken, Harrison, Pendleton, Campbell and Kenton.

The region as a whole slopes gently toward the Ohio River, which forms the northern boundary. It is drained by the Ohio and Licking rivers, the latter flowing through the central portions of this group of counties. The underlying rock consists chiefly of ancient limestones. On the southeastern border of the region, however, sandstones and shales predominate, and the country is rough and hilly, with the narrow ridges rising 300 to 400 feet above the streambeds. Westward, the topography is smoother, and there is a transition to the gently rolling bluegrass country. The absolute eleva-

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tions vary from about 1,200 feet above the sea level in southeastern Bath and Fleming counties, to about 400 feet on the Ohio River.

The soil of the greater part of this region is of limestone origin and is very productive, especially in the valleys, but is not as good in the hilly section of sandstones and shales. On the steeper slopes, cleared land is frequently abandoned after two or three agricultural crops have been produced, since the soil washes badly and soon becomes useless unless reforested.

This is essentially an agricultural region, as is shown by the large proportion of cleared land. The farms are small, the greater number of them being under 100 acres in area. Tobacco is the chief money crop, the finest quality of white Burley tobacco being grown in this part of Kentucky. Other crops and live stock are raised chiefly for home consumption. The value of land is high, the assessors' figures varying from about $12 in Robertson to $45 per acre in Kenton and Campbell counties, with an average of approximately $25 for the whole region. The value of forest land is considerably lower and is assessed at from $2 to $20 per acre. There is little absolute forest land, certainly not more than enough to supply the local demands, even if it yielded the greatest possible timber crop. Some hillsides which have been cleared and subsequently eroded, are really absolute forest land, because, in the long run, a forest crop would have been the most profitable. There are few large timber tracts in this region, and the greater part of the forest land is in woodlots.

Before the development of railroads, the Ohio and Licking rivers were the highways of commerce for this region. Lumber and other products were shipped by barge, and logs were floated either to Cincinnati or to other points on the Ohio. At present the rivers are used only to a small extent and then only for the local transportation of logs and timber. Railroads now form the principal means of transportation. The system is well developed, penetrating all of the counties but one. The county roads, which act as feeders to the railroads, are for the most part in fair condition. In some of the counties more than 50 per cent of the roads have been macadamized with limestone rock, which is generally abundant. The best pikes are in Kenton and Campbell counties, where the toll system formerly prevailed. The dirt roads are not as good as the macadamized pikes, especially in counties

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where they are worked under so-called militia system. Improvement in the building and maintenance of roads will increase the prosperity of the country.

The greater part of the timber is used locally. The lumber is sawed chiefly by small portable mills, which move about the wooded sections doing custom work. Cincinnati is the chief general market for logs, ties and staves.

Present Stand and Output of Forest Products.

Although this district was once heavily forested, its moderate slopes and fertile soil have resulted in the clearing of the land until only ten per cent, or about 160,000 acres, remains in forest. The total stand is estimated at over 200 million board feet, an average of slightly more than 1,200 feet per acre. Montgomery and Bath counties, although averaging only about 1,000 feet per acre, have the largest proportions of forest land. White oak still stands first in quantity as well as in value among the merchantable timbers, and together with black oak, which is a close second, comprises nearly half of the entire stand. Hickory, maple and gum are next in amount. A detailed estimate by species, showing the remaining timber of the several counties, is given in Table 16.

Although the timber production has greatly declined, the output for 1907-8 reached 25 million board feet. Of this, 16 million feet was sawed by local mills, and small shipments of ties, logs, staves and miscellaneous material made up for the rest. The upper counties, Montgomery, Bath and Fleming, supply nearly all of the ties. The value of the output of forest products is estimated at $560,000, showing that the forests are still a source of considerable income and should be kept permanently productive.

Tables 17, 18, 19 and 20 show in detail the estimated output of the different classes of timber for each county.

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TABLE No. 16.

Estimated amount of stand in thousand feet, board measure, by counties and species.

LOWER LICKING RIVER DISTRICTS

COUNTIES.	Total area, acres	Area forested acres	Per cent of forest	Average stand per acre bd. ft.	Total	White oak	Black oak	Hickory
Montgomery	128,640	36,315	28	1,074	38,987	7,511	6,715	2,670
Bath	172,800	69,089	40	1,107	76,499	12,838	13,149	5,510
Fleming	204,160	29,830	15	1,243	37,067	8,133	9,305	3,117
Mason	130,560	1,991	2	2,247	4,473	1,918	876	358
Nicholas	143,360	3,279	2	2,483	8,141	3,423	1,646	1,146
Robertson	61,440	2,180	4	2,365	5,156	2,096	1,092	752
Bracken	123,520	2,401	2	2,704	6,493	2,560	1,387	751
Harrison	209,280	9,889	5	1,656	16,380	6,141	3,345	1,316
Pendleton	163,200	3,208	2	2,004	6,430	3,065	1,113	641
Campbell	92,800	1,752	2	2,421	4,241	1,889	960	337
Kenton	113,280	2,052	2	1,781	3,655	1,440	912	367
Total	1,543,040	161,986	10	1,281	207,522	51,014	40,500	16,965

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TABLE No. 16—Continued.

COUNTIES.	Maple	Gum	Yellow pine	Ash	Beech	Chestnut oak	Poplar	Sycamore
Montgomery	3,521	3,631	1,405	2,224	1,716	780	2,647	2,114
Bath	4,685	8,047	6,160	1,850	4,270	5,014	4,480	3,779
Fleming	1,944	1,326	1,990	1,095	1,901	3,316	1,399	351
Mason	371	.....	.....	255	219	.....	91	24
Nicholas	511	.....	.....	473	191	.....	50	68
Robertson	348	.....	.....	208	177	.....	85	54
Bracken	634	.....	.....	333	223	.....	.....	.....
Harrison	1,394	.....	.....	2,450	149	.....	.....	258
Pendleton	699	.....	.....	346	54	.....	.....	.....
Campbell	266	.....	.....	131	165	.....	31	72
Kenton	320	.....	.....	173	80	.....	7	58
Total	14,693	13,004	9,555	9,538	9,145	9,110	8,790	6,778

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TABLE No. 16—Continued.

COUNTIES.	Chesnut	Locust	Basswood	Walnut	Elm	Buckeye	Cucumber	Scattered
Montgomery	745	2,202	689	156	213	48	.....	.....
Bath	2,471	1,539	1,413	622	380	146	146	.....
Fleming	2,321	49	.....	76	30	.....	.....	714
Mason	.....	148	.....	77	68	.....	.....	68
Nicholas	.....	181	24	217	137	.....	.....	74
Robertson	.....	151	6	49	70	.....	.....	68
Bracken	.....	173	.....	123	194	.....	.....	115
Harrison	.....	516	.....	231	283	.....	.....	297
Pendleton	.....	129	.....	139	144	.....	.....	100
Campbell	.....	107	.....	121	115	.....	.....	47
Kenton	.....	94	.....	95	66	.....	.....	43
Total	5,537	5,289	2,132	1,906	1,700	194	146	1,526

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TABLE No. 17.

Present annual output of logs in thousand feet, board measure, shipped outside the county for manufacture—by counties and species.

LOWER LICKING RIVER DISTRICTS

COUNTIES.	Total	White oak	Walnut	Black oak	Ash	Poplar
Montgomery	.....	.....	.....	.....	.....	.....
Bath	.....	.....	.....	.....	.....	.....
Fleming	47	47	.....	.....	.....	.....
Mason	131	131	.....	.....	.....	.....
Nicholas	50	25	15	.....	10	.....
Robertson	.....	.....	.....	.....	.....	.....
Bracken	260	260	.....	.....	.....	.....
Harrison	20	15	5	.....	.....	.....
Pendleton	330	293	37	.....	.....	.....
Campbell	98	70	23	.....	.....	5
Kenton	600	465	55	80	.....	.....
Total	1,536	1,306	135	80	10	5

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TABLE No. 18.

Present annual output of lumber in thousand feet, board measure (excluding lumber from logs cut in other counties—by counties and species.

LOWER LICKING RIVER DISTRICT.

COUNTIES.	Total	White oak	Black oak	Poplar	Ash	Pine	Beech	Chestnut oak
Montgomery	1,080	245	435	130	30	205	.....	.....
Bath	2,000	890	132	296	35	260	16	83
Fleming	3,424	1,946	207	138	3	95	174	439
Mason	1,062	752	76	12	26	.....	77	.....
Nicholas	1,990	1,333	287	32	54	.....	38	.....
Robertson	888	750	28	15	27	.....	22	.....
Bracken	1,726	1,300	102	.....	59	.....	43	.....
Harrison	1,825	680	425	.....	315	.....	91	.....
Pendleton	890	577	96	.....	20	.....	46	.....
Campbell	492	309	77	11	13	.....	22	.....
Kenton	790	544	159	1	4	.....	22	.....
Total	16,167	9,326	2,024	635	586	560	551	522

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TABLE No. 18—Continued.

COUNTIES.	Maple	Hickory	Chestnut	Gum	Walnut	Elm	Sycamore	Basswood	Scattered
Montgomery	.....	.....	5	15	.....	.....	15	.....	.....
Bath	.....	.....	78	160	.....	.....	.....	50	.....
Fleming	30	93	202	.....	.....	.....	4	.....	93
Mason	43	42	.....	.....	2	9	12	.....	11
Nicholas	57	20	.....	.....	65	33	16	8	47
Robertson	19	12	.....	.....	5	5	1	3	1
Bracken	43	81	.....	.....	33	10	6	.....	49
Harrison	193	20	.....	.....	.....	35	16	.....	50
Pendleton	61	14	.....	.....	6	17	20	12	21
Campbell	2	31	.....	.....	5	7	12	.....	3
Kenton	6	33	.....	.....	11	7	.....	.....	3
Total	454	346	285	175	127	123	102	73	278

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TABLE No. 19.

Present annual output of miscellaneous material by counties.

LOWER LICKING RIVER DISTRICT.

COUNTIES.	SAWED TIES.			Total number	HEWED TIES.	
	White oak	Black oak	Soft-woods		White oak	Black oak
Montgomery	8,300			8,300	15,500	
Bath	4,900	100		5,000	43,250	11,250
Fleming	33,390	390		33,780	18,280	
Mason	5,000			5,000		
Nicholas						
Robertson						
Bracken						
Harrison						
Pendleton						
Campbell					500	
Kenton						
Total	51,590	490		52,080	77,530	11,250

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TABLE No. 19—Continued.

COUNTIES.	HEWED TIES. Soft-woods.	Total number	Number of sawn staves	Number of spokes	Number posts	Shingles (M)	Tanbark cords
Montgomery	.....	15,500	.....	.....	.....	300	.....
Bath	1,000	55,500	.....	18,000	.....	.....	.....
Fleming	720	19,000	1,400,000	.....	.....	5,154	150
Mason	.....	.....	.....	.....	.....	.....	.....
Nicholas	.....	.....	.....	.....	.....	.....	.....
Robertson	.....	.....	.....	.....	5,000	.....	.....
Bracken	.....	.....	.....	.....	.....	.....	.....
Harrison	.....	.....	.....	.....	.....	.....	.....
Pendleton	.....	.....	.....	.....	.....	.....	.....
Campbell	.....	500	.....	.....	.....	.....	.....
Kenton	.....	.....	26,660	.....	.....	.....	.....
Total	1,720	90,500	1,426,660	18,000	5,000	5,454	150

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TABLE No. 20.

Present annual output of timber by counties, computed in thousand feet, board measure.

LOWER LICKING RIVER DISTRICT.

COUNTIES.	Total	Logs	Lumber	Ties	Spokes	Staves	Posts	Shingles
Montgomery	2,007	.....	1,080	897	.....	.....	.....	30
Bath	4,409	.....	2,000	2,387	22	.....	.....	.....
Fleming	7,552	47	3,424	1,886	.....	1,680	.....	515
Mason	1,360	131	1,062	167	.....	.....	.....	.....
Nicholas	2,040	50	1,990	.....	.....	.....	.....	.....
Robertson	963	.....	888	.....	.....	.....	75	.....
Bracken	1,986	260	1,726	.....	.....	.....	.....	.....
Harrison	1,845	20	1,825	.....	.....	.....	.....	.....
Pendleton	1,220	330	890	.....	.....	.....	.....	.....
Campbell	610	98	492	20	.....	.....	.....	.....
Kenton	1,422	600	790	.....	.....	32	.....	.....
Total	25,414	1,536	16,167	5,357	22	1,712	75	545

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The Forest.

Owing to the demand for agricultural land, the forest growth is now restricted to hilltops, slopes and rougher areas, and to old fields and clearings where black locust is coming in. There is so little variation in soil, exposure, moisture and elevation, that only two types of forest are distinguished; mixed hardwoods and black locust.

Mixed Hardwoods.—The mixed hardwood type is the remnant of the original forests and is found everywhere throughout the region, although it is of greater relative importance in the southeastern counties. As the name implies, it is composed of a wide variety of hardwood species, of which oak, walnut, ash, hickory, maple and poplar are the most important. The type may be divided into two sub-types or forms, depending on whether the principal use of the woodland is for pasturage or for wood production.

About one-fifth of the mixed hardwood type may be classified as pastured groves. These usually occupy a deep and fertile soil which would ordinarily be cleared for cultivation were it not for the desire of the owner to preserve a few trees on his farm for aesthetic purposes and for shade for his cattle. White oak, ash and maple predominate in these groves, but all of the indigenous hardwoods are represented by occasional trees. The stand is open, with large boled spreading trees, irregularly distributed. Shrubs and young growth are cleaned out, giving a park-like effect to the forest. The ground is covered with bluegrass turf, which, together with the stock grazing, prevents any reproduction. Therefore, there are no young trees to replace any that die or are cut down.

About 80 per cent of the mixed hardwoods are reproductive and are therefore not classed as pastured groves, although often used to a limited extent for grazing. This form of forest usually occupies soil classed as nonagricultural, and is more abundant in the rougher sections. The most important and valuable species are white oak, red oak, walnut, ash, hickory, maple and poplar, and scattered along the streams are beech, elm and sycamore, with walnut, ash and poplar on moist bottom lands. On the hillsides and ridges there is a mixture of species in which white, red and black oaks, with shagbark hickory, predominate. On the ridge tops and high, dry locations, chestnut oak, post oak and black jack take the

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place of the other oaks. On the ridges of Bath, Fleming and Montgomery counties, pine sometimes grows in mixture with the hardwoods. These forests either take the form of woodlots or of small timber tracts. The density is variable, but on the whole is greater than that of the pastured groves. The trees are of all ages and sizes, from small seedlings to mature specimens two and three feet in diameter. As the forests have been repeatedly cut over, smaller trees predominate and large trees of such valuable species as walnut and poplar are rare. Reproduction is good throughout the region where fires are not frequent. All species are represented in the young growth, but maple and hickory predominate. Walnut seedlings grow on the bottoms, and beech seedlings thrive on the lower slopes. White, red and black oaks reproduce well, more often by sprouts than by seedlings. Where lumbering is followed by repeated fires, the young growth deteriorates into worthless brush.

Black Locust.—The black locust type consists of pure black locust stands, varying from dense thickets of young sprouts to groups of scattering large trees. Unlike the mixed hardwoods, this is a new type, since it has come in since the land has been cleared by settlers. Land cleared for farm purposes, if not constantly cultivated, is soon covered by dense thicket stands that seed in from the old black locusts that are scattered over the farms of this region. When locust becomes once established, it is very difficult to eradicate, because of its persistent sprouting ability. It has been allowed to grow up on pastures and wornout fields, and forms even-aged stands. Although it thrives best on a deep, moist limestone soil, this tree is able to adapt itself to a great variety of sites and does fairly well even on thin, dry soil of the upper slopes. Usually the locust type occupies the poorer, rockier or more broken slopes and hilltops, where its presence is a protection against soil erosion and its roots enrich the soil. Its occupation of such lands should be regarded as beneficial, especially as it is not taking up ground which would be more valuable for farm crops. Both seedling and sprout reproduction are found throughout the type, but the latter form is more common and by far the more vigorous.

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Forest Management.

The management of the pastured groves of old forest trees can not well include any scheme for natural reproduction, as this cannot be attained except by breaking up the turf and excluding cattle for ten years or more. When the large trees begin to die out, as they must in time, planting must be resorted to, unless it is desired that the land eventually become open, unshaded pasture. In order that the most profitable use of the land may be made, it is best to cut the old trees before decay sets in and destroys their value for lumber. If it is desired that the grove should be maintained, each tree that comes out should be replaced by several sturdy seedlings two or more years old. These planted trees must be inclosed by wire fences or some similar protection, in order to prevent stock from destroying them. If there is a fair proportion of thrifty trees, so that the restocking of the grove does not have to be accomplished quickly, it is well to plant long-lived, valuable species rather than those of the most rapid growth. Walnut, yellow poplar and white oak are, in general, good trees to use. This plan for maintaining the shade would not interrupt the use of the land for grazing.

The mixed hardwood type, not pastured, should be managed by the usual selection system, which consists in cutting out mature trees, and leaving those which are increasing in value at such a rate that it is more profitable to let them stand than to cut them. This system may be modified in various ways, in accordance with market conditions and the class of material desired. It is applicable to both farm woodlots and large timbered tracts, but with important differences as to detail.

In a woodlot, handled to produce lumber for local use, the case of each individual tree may be considered on its own merits. If it seems to be past its maturity and unnecessary as a seed tree, it should be removed, especially if promising young growth is already present. When defective or inferior trees are crowding thrifty young growth of more valuable species, they may also be taken out at the same time. Small trees that are crooked or otherwise defective and undesirable may be cut and used for fuel wood.

The same ideas may be applied more roughly on larger timbered tracts where market conditions do not justify an in-

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tensive management. Instead of considering each individual, the trees may be grouped by diameter classes and those above a specified diameter limit cut. This limit may be varied in order to favor certain species by cutting its rivals more closely, and can be decided upon only by a study of local conditions. If saw-timber is desired, the limit must be higher than if the tie production is the main object. Both may be obtained by thinning out timber of the size, taking out for cross-ties enough trees to open up the stand. This will stimulate the growth of the remaining trees and allow them room for development to saw log size. In all caess, protection from fire and grazing is necessary.

Throughout the region, yellow poplar, walnut, white and red oaks, ash and hickory, in the order named, are the best trees to favor. A mixed rather than a pure stand of these species is desirable.

County Descriptions.

Montgomery County.—Montgomery County, on the southeast border of the bluegrass region, has an area of 128,-640 acres. The northwestern half of the county is drained by Hinkston Creek, a tributary of the South Fork of Licking River, while a section in the west drains into the North Fork. The southeastern part is drained by Lulbegrud Creek, which flows into Red River. The topography represents the transition from the mountain to the bluegrass region and varies from hilly in the southeast to rolling in the northwest. The soil is generally fertile and produces corn, tobacco, hemp and grasses.

The main line of the Chesapeake & Ohio Railroad crosses the county in a northeasterly direction and a branch line extends southeast from Mt. Sterling. There are about 100 miles of turnpike, supported by taxation, and as many miles of dirt roads in addition. Lumbering is a minor industry in this county, although a few small sawmills operate part of the year to supply local demands. Cross-ties and a few shingles are also produced.

Outside of several thousand acres of second growth timber and brush lands in the extreme southern part of the county, the forest is very open and scattering, with few extensive groves. A large part of the woodland is pastured,

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with no reproduction under the mature trees, which are often of large diameter, although short and spreading.

As the chief demand here is for farm timbers, such species as locust, which does extremely well here, and yellow poplar, which by its rapid growth will yield quick returns, should be propogated where possible. There is quite a large area of land in the southern part of the county valued at from two to five dollars per acre which is covered with bushes and small saplings. If properly protected, and improved by planting where necessary, this land should in a few years yield good returns, as there will always be a strong demand for posts and inferior grades of timber.

Bath County.—Bath County is drained by Licking River and its tributaries, chief of which are Flat and Slate Creeks and Salt Lick. The approximate area is 172,800 acres. The county is about evenly divided between the bluegrass and the hill country, the former underlaid by limestone and with soil of great fertility. The topography is characterized by low hills in the northern half, becoming somewhat higher and rougher toward the south. The Chesapeake & Ohio Railroad crosses the southern half of the county and is connected with Yale and points further up the river by the Licking Valley Railroad, a narrow gauge road connecting with the main line at Salt Lick.

Ties, lumber and spokes are the chief products that are obtained from the depleted forests of this county. Only a few thousand acres of woodland remain that have not been so heavily culled that the virgin character has been entirely lost. In the north and west part of the county are scattering, park-like groves, usually pastured, while in the south the woodland, although more extensive, is largely reduced by heavy cutting and repeated fires to a scrubby growth of oak and pine. Lands cleared for charcoal in the days of the iron industry, over thirty years ago, have been reproduced to even-aged stands and are now heavily culled.

The chief aims of forest management should be to keep out fires and to improve the stand by cutting out inferior and defective trees as soon as practicable. The stock law, now in force in only one precinct, should be extended over the entire county, so that the young growth may be protected from grazing when reproduction is desired.

Fleming County.—Fleming County, with an area of 204,160 acres, is north of Bath County on the opposite side of

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Licking River. Except for a narrow strip on the North Fork, which forms the northeast boundary line, the county is drained by tributaries of the main river, chief of which are Fleming and Fox Creeks. The topography is rolling in the western part, becoming rougher toward the east until the hills rise to a height of 300 feet above the streambeds.

The chief means of transportation is the Louisville & Nashville Railroad, which runs through the western part of the county and is connected with Flemingsburg by a narrow gauge line. This line formerly continued to Hillsboro, but this part has lately been removed. It is expected that this railroad will be standardized and again extended to Hillsboro, thus giving an outlet to the forest products of the hill country which must now be hauled to Morehead or Salt Lick. The roads in the western part are better than those in the eastern part, because the gentler grades make it easier to keep them in condition.

The timber supply of the county is largely limited to the eastern portion, where the forest, although not yet exhausted, have been heavily culled for staves, shingles, ties and sawlogs. The western and central part is primarily agricultural, and here the forests usually take the form of open, pastured groves.

In order to improve the character of the forests, the best species should not be cut too close, and the smaller, thrifty, merchantable trees should be left to mature and bear seed. At the same time, room should be made for young growth by taking out all the inferior material that can be hauled without loss. In the western part of the county, where locust is coming in abundantly on old fields, the management of this tree for posts, should be profitable. Fire protection is essential.

Mason County.—Mason County lies between Fleming County to the south and the Ohio River, which forms the northern boundary and drains the adjacent strip of land. The greater part of the county, which has an area of 130,560 acres, is drained by the North Fork of Licking River. The topography is rolling, and becomes rather broken and hilly near the Ohio. The soil, which is of limestone origin, is very fertile.

Transportation facilities are good, with two railroad lines and 350 miles of excellent macadamized roads, besides

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the water route afforded by the Ohio River. The lumber business, now of minor importance, is carried on by fourteen small saw-mills doing for the most part custom work. Maysville is the principal shipping point for logs and ties.

In the eastern part of the county practically all of the land has been cleared for cultivation, of which about 8 per cent has been neglected and allowed to grow up with locust. The greater part of the locust has reached an average diameter of five inches. The present timber supply is confined to the southern and western sections, where a few scattered tracts of woodland will run 5,000 board feet to the acre of white oak, maple and hickory. Most of the timberland has been heavily culled so that only inferior trees remain. Many groves of small maple and hickory are used as pasture lands.

There is very little land in this county that is not valuable for agricultural purposes, and the forest can be permanently maintained only in small woodlots for local use in connection with farming. These should be managed intensively and may be used for pasture unless this interferes too seriously with reproduction. The black locust may be grown for posts, and poplar, oak and other hardwoods for lumber.

NICHOLAS COUNTY.—Nicholas County covers an area of about 143,360 acres, and lies south of Licking River below Bath County. The drainage is divided between the river and Hinkston Creek, which forms a part of the southwest boundary. This is a region of low, rounded hills, the highest points rising 300 feet above the streambeds. The soil is fertile and especially fitted for agriculture.

The Paris division of the Louisville & Nashville Railway crosses the central part of the county. The road system is very good, and includes about 230 miles of macadamized pikes. Most of the lumber grown in this county is sawed on the ground by small portable mills, about twelve in number. In addition, a few logs are shipped out by rail.

The forest land is in scattered and broken areas and occupies about two per cent of the total acreage of the county. About one-sixth of this land is of the black locust type, with trees of all sizes, mostly small. The remainder consists of woodlots of mixed hardwoods, with maple and hickory especially abundant among the young growth where cattle are excluded. A special feature is the red cedar belt, roughly four miles long by three wide which is found in the vicinity

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of Lower Blue Lick Springs and extends also into Robertson and Fleming counties. This belt contains several large and well-stocked stands of pure cedar, apparently a remnant of a large forest. These have been preserved partly for their historical associations.

Forest management will be practiced on only a small scale in this county, but intensive methods may be used for the production of posts and lumber for use on the farm.

Robertson County.—Robertson County occupies 61,440 acres of land included between Licking River and its North Fork. The topography is rolling, with low hills covered by a fertile limestone soil. No railroad enters the county as yet, and Mt. Olivet, the county seat, is 20 miles from the nearest shipping point. The main roads are macadamized, making about 65 miles of turnpike. The river is used to a limited extent at seasons of high water.

The chief industry of Robertson County is agriculture. The lack of railroad facilities makes it impracticable to ship out logs or lumber, and the timber industry is carried on by seven small mills sawing for local use.

The forest, which covers about four per cent of the county, is scattered in small tracts, all heavily culled except for a few stands that are held for an advance in price. A large part of this forest is pastured, as the live stock industry is of great importance here. Although only about one per cent of the county is one of the locust type, this proportion will probably increase.

Bracken County.—Bracken County, with an area of about 123,520 acres is on the Ohio River, below Mason County. The northern half is drained by tributaries of the Ohio, and the southern half by streams flowing into the North Fork of Licking River, which forms part of the southern boundary of the county. The topography is rolling.

The Chesapeake & Ohio Railroad, connecting Cincinnati with the east, runs along the Ohio River, and is connected with Brooksville, the county seat, by an independent road. Both the dirt roads and 170 miles of turnpike could be improved with benefit to the county. Fourteen saw-mills operate part of the year, and the greater part of their product is used for the construction of tobacco barns. Some white oak is shipped in the log to the large saw-mills of Ohio and Indiana, where it is made into quarter-sawed lumber and

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cooperage stock. Lumbering is of very minor importance in this county.

The remaining part of the original forest which now occupies approximately two per cent of the area of the county, occurs in small woodlots. The principal tree is the white oak. In general the hardwood reproduction is good. Black locust has become an important factor, covering old fields with a growth that may be in many places profitably handled for fence posts. This type covers about three per cent of the county.

HARRISON COUNTY.—Harrison County has an area of 209,280 acres and is on Licking River immediately south of Pendleton. The drainage is divided between the South Fork, which flows through the central part of the county, and the main river on the eastern border. The southwestern quarter of the county is an undulating plain of great fertility, while the remaining part is of the rolling type that characterizes Bracken and Pendleton counties.

Railroad transportation is afforded by the main line of the Louisville & Nashville, which follows the South Fork. There are about 325 miles of macadamized roads which are of incalculable benefit to the county. The 225 miles of dirt roads are supported by the militia system, but are in fair condition. Lumbering is conducted an a small scale by about 18 portable saw-mills, and in addition a very small amount of timber is shipped out in the log. Harrison is primarily an agricultural county.

The remaining timber is mostly in small areas belonging to the different farms. Most of these woodlots are used as pastures and are in the form of groves rather than forests, containing no young growth. Where they are not pastured, there is abundant reproduction. A large part of the timber is white oak. As in Bracken County, black locust has established itself over considerable areas and must be reckoned with in forest management.

PENDLETON COUNTY.—Pendleton County is on Licking River above Campbell and Kenton counties and directly east of Bracken. The area is approximately 163,000 acres. It is drained by Licking River and its branches, except for a small strip on the northeast corner which is bordered by the Ohio River. The topography is rolling, with rounded hills rising

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200 to 300 feet above the river. Although the soil is fertile, it often washes badly on the slopes.

Transportation facilities are good, with the Louisville & Nashville Railroad traversing the central part of the county, and with a network of some 300 miles of turnpike in excellent condition. Fourteen saw-mills continue to operate on a very small scale, doing custom work for the most part. The chief industry is agriculture while dairying is becoming important in the northern section of the county.

Very little of the first-class saw-timber remains. A few stands of virgin white oak, red oak, hickory and maple, mixed with young hardwood growth, may be found, but the old trees are as a rule overmature and defective. In these cases, the mature timber should be removed, leaving only a few of the thriftiest trees for seed. About five per cent of the county is covered by the black locust type, which has established itself chiefly on old, washed-out fields, where it should be maintained and improved for the production of fence posts. After locust is well established, the ground under it may be used for pasture.

CAMPBELL COUNTY.—Campbell County lies between the Ohio and Licking rivers and is drained to the northeast and to the west by their respective tributaries. Its area is about 92,800 acres. The topography is rolling, similar to that of Pendleton County. The transportation facilities are very good, as both rivers are paralleled by railroads terminating at Cincinnati. There are about 50 miles of county turnpike and as many miles of toll road, all in fine condition. The dirt roads, some 235 miles in all, might be improved in some parts.

Agriculture is the chief industry, with truck-gardening and dairying of special importance in the northern part. Lumbering is carried on largely to supply the local demands, although a few logs are rafted to Cincinnati. There are fifteen saw-mills in the county, usually running only part of the year.

About four per cent of the land is coming up to locust, while only about two per cent is covered by the mixed hardwood types. The northern half of the county has very little woodland outside of the locust thickets, which may be thinned and improved so that what would otherwise be waste land may be made productive. The woodlots of oak, hickory and

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maple may be handled so as to produce a supply of rough lumber for use on the farms.

KENTON COUNTY.—Kenton County contains 113,280 acres and lies west of Campbell County on the opposite side of Licking River. It consists of fertile, rolling land similar to the adjoining counties. Although a strip on the northern border is drained by small creeks flowing into the Ohio, the greater part of the county is included in the Licking River basin. The two rivers and three lines of railroad afford good transportation facilities. There are 43 miles of toll pike, 175 miles of county pike, and 143 miles of dirt road, all in good condition in the summer months.

The industries and forest conditions here are very similar to those of Campbell County. Eight mills operate part of the year, sawing the remnants of the standing timber. White, red and bur oaks are the most valuable species, and in some cases have been entirely removed, leaving only scattering maple and hickory. In addition, the woodlots are often pastured, which prevents reproduction.

Throughout the county considerable waste land has been allowed to come up to black locust. It is estimated that four acres out of every hundred are of this type. Since there is a good demand for posts, it is advisable that some care be expended upon these lands with a view to getting the heaviest yield possible.

TRADEWATER DISTRICT.

GENERAL CONDITIONS.

The fourteen western counties covered in this study include the greater part of the Western Kentucky coal field, and in addition several counties to the south and west. The region as a whole slopes very slightly to the northwest, and is drained by the Ohio and its tributaries. Sandstones and shales predominate among the underlying rock, the mineral value of which consists chiefly in its extensive coal seams, and to a smaller extent in the fluor spar and other deposits of less importance. The topography varies from the broad, flat, flood plains, which border the rivers and follow up the larger creeks to hilly upland, which culminates in irregular ridges rising 200 feet above the streams. The flood plains are rich

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in their deep, fine, alluvial soil deposited by the overflow of the rivers. The upland soils vary from clay and loam to sand and gravel, usually with a clay subsoil. In the hilly section, this soil washes badly soon after the removal of the forest cover, and as a result much land has been ruined.

In general, the topography of the country is favorable to cheap lumbering operations on a small scale. The most serious obstacle to logging is the wet condition of the bottoms throughout the greater part of the year. Most of the timber is in woodlots and tracts of moderate size, owned by the farmers or by mining companies. Timbered tracts over 500 acres in area are not numerous, and are nearly all located in the Pond and Green River bottoms.

The average assessed value of land in these counties ranges from $6.84 in Hopkins County to $21.62 in Daviess. As a rule, woodland is assessed at a lower figure than cleared land, while good coal land is valued considerably higher. Actual values greatly exceed the assessed values. The tax rate is moderate, varying from one to one and one-half per cent, and there is no pressure to cut timber in order to get rid of the land and escape taxes.

With the exception of small woodlots that should be preserved as adjuncts of the farm, there is probably only a small proportion of the bottomlands that can be considered as absolute forest land. The woodlots can be located in the lowest places, where it is most difficult to secure drainage adequate for agricultural purposes. On the other hand, the upland includes hilly country, where the soil will not remain on the steeper slopes without the protection of a forest cover. That such land can not be farmed profitably is proved by the many fields that have been cleared and abandoned after a few years, with the soil washed out and cut up by deep gullies. Such land is chiefly valuable for raising timber, and may be classed as absolute forest land. The proportion of absolute forest land in the entire district is estimated at 12 per cent., while the proportion of actual forest land at present is 33 per cent. for the entire district. The percentage for each county will be found in Table 21.

Excellent facilities for water transportation characterizes this section of Kentucky. Three great navigable rivers, the Green, Cumberland and Tennessee, bear the products of the country to the broad Ohio. In addition, the Tradewater, be-

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tween the Green and Cumberland, is open to navigation part of the year.

The Louisville & Nashville Railway divides the heavy coal carrying trade and other rail business of this section with its rival—the Illinois Central. The two lines have extended their branches so that few places are farther than 12 miles from some shipping point.

The roads in this district are, on the whole, in fair condition. The old "militia system" has been abandoned by many of the counties, or combined with the taxation system. Many counties possess modern road machinery, and make excellent dirt roads. Partly owing to the scarcity of suitable rock, few macadamized pikes are made. In the roughest sections, where the graders can not be used, the roads are not so good.

A large part of the lumber sawed in this region is used locally for general construction purposes and for use in coal mining. The mines also require a large number of props and ties, which may be made from small timber. The staves, ties, car and vehicle stock, logs and minor forest products go to the saw-mills and wood working plants of Owensboro, Evansville, Henderson, Shawneetown, Paducah, Metropolis and interior Indiana points. Cross-ties are delivered all along the railroads lines, and are usually bought by large tie companies.

Present Stand and Output of Forest Products.

This part of Kentucky was originally richly stocked with a great variety of valuable hardwoods. Its accessibility and the value of the land for agriculture early marked the forest for destruction. Year after year the rivers carried away their wealth to satisfy the demands of the great saw-mills that grew up at Evansville and other places on the Ohio. The enormous waste, through the decay and burning of timber, that always accompanies the settlement of new lands, was not wanting. At present, only one-third of the region, amounting to about 1,200,000 acres, is in forest. Practically no virgin timber remains, although excellent stands can yet be found on some of the bottomlands, which have been logged only a few times and then only for the most valuable species. These stands owe their present value to the fact that red gum, once despised, is now widely used and highly valued. A few of these tracts will average 4,000 to 5,000 board ft. per acre over

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areas of a thousand acres or more. The average stand for the entire district is however, a little less than 2,000 board feet per acre, and large areas of upland, once covered with moderately heavy timber, will not average 500 feet per acre. The total stand is estimated at 2,159,000,000 board feet. Black oak, white oak and sweet gum are the most abundant species in the order named, and together comprise over half of the standing timber. The estimated stand of all the merchantable species is shown in Table 21.

Cross-ties, lumber and logs are the chief forest products of the Tradewater district. The ties, of which over two-thirds are hewed, amount to more than either lumber or logs, and to about 14 million feet less than both taken together. The logs, which comprise all saw-timber not manufactured within the county where it is cut, are equal in board-foot content to half the lumber that is sawed locally. Of the minor products, cooperage stock is the most important, the year's consumption of staves and heading exceeding 10 million board feet. The species that are most heavily cut, black oak, white oak and gum, are the same that form the largest proportion of the standing timber.

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TABLE No. 21.

Estimated amount of standing timber in thousand feet, board measure—by counties and species.

TRADEWATER DISTRICT.

COUNTIES.	Total area acres.	Area forested acres	Percent of forest	Average stand per acre, bd. ft.	Total	Black oak	White oak	Gum . . . . .
Todd	238,720	62,406	26	1,591	99,293	37,994	23,695	3,691
Muhlenberg	280,320	110,602	39	1,849	204,460	70,843	23,774	40,125
McLean	161,920	74,054	46	2,659	196,894	32,900	26,939	43,811
Henderson	264,960	36,834	14	1,511	55,639	17,388	8,254	18,097
Daviess	283,200	113,723	40	1,940	220,593	41,183	19,477	30,875
Union	247,680	12,454	5	1,196	14,889	4,930	2,438	4,299
Webster	227,200	35,269	15	1,071	37,782	14,704	5,504	9,507
Hopkins	355,200	147,093	41	1,263	185,750	54,803	23,687	38,006
Christian	444,160	117,207	26	1,523	178,520	72,698	29,551	10,293
Trigg	307,840	191,600	62	2,556	489,766	203,619	128,255	42,433
Lyon	144,640	88,431	61	1,838	162,579	50,320	54,924	13,737
Caldwell	216,320	71,377	33	1,810	129,159	45,749	42,053	9,462
Crittenden	249,600	50,680	20	990	50,152	19,988	11,467	6,666
Livingston	244,480	93,895	38	1,419	133,274	54,229	21,221	19,270
Total	3,666,240	1,205,625	33	1,791	2,158,750	721,348	421,239	290,272

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TABLE No. 21—Continued.

COUNTIES.	Hickory	Beech	Poplar	Post oak	Maple	Sycamore	Elm	Ash
Todd	10,546	4,485	3,490	6,698	2,301	1,737	209	353
Muhlenberg	9,488	29,505	2,645	35	5,342	4,272	3,135	1,091
McLean	15,498	15,647	6,901	.....	14,179	9,808	10,943	7,540
Henderson	2,693	.....	865	.....	786	1,491	3,313	1,037
Daviess	21,009	8,387	15,657	.....	17,173	25,177	18,785	8,653
Union	1,051	.....	324	.....	166	500	313	247
Webster	3,968	1,274	187	701	926	211	440	240
Hopkins	19,486	17,073	5,574	3,425	10,408	2,267	6,491	2,435
Christian	18,167	13,186	11,356	12,353	2,754	1,983	1,436	508
Trigg	46,775	1,326	21,772	25,539	11,466	5,179	3,402	.....
Lyon	13,110	2,913	4,236	18,537	2,249	1,189	1,364	.....
Caldwell	9,687	3,286	7,140	6,732	2,012	1,757	985	296
Crittenden	2,693	286	843	4,559	787	908	919	665
Livingston	10,833	5,999	4,353	1,126	1,677	6,164	3,675	2,489
Total	185,004	103,367	85,343	79,705	72,226	62,643	55,410	25,554

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TABLE No. 21—Continued.

COUNTIES.	Cottonwood	Cypress	Basswood	Chestnut	Walnut	Pine	Scattered
Todd	.....	.....	212	1,811	116	965	990
Muhlenberg	999	190	.....	.....	.....	.....	13,016
McLean	4,701	3,819	1,348	315	.....	.....	2,545
Henderson	212	1,114	.....	.....	.....	.....	389
Daviess	3,699	4,031	3,090	2,784	613	.....	.....
Union	330	134	.....	.....	.....	.....	157
Webster	.....	.....	.....	.....	.....	.....	120
Hopkins	1,327	.....	.....	.....	.....	.....	768
Christian	.....	.....	358	.....	1,744	.....	2,138
Trigg	.....	.....	.....	.....	.....	.....	.....
Lyon	.....	.....	.....	.....	.....	.....	.....
Caldwell	.....	.....	.....	.....	.....	.....	.....
Crittenden	59	65	.....	.....	.....	.....	247
Livingston	.....	286	155	.....	438	.....	1,359
Total	11,327	9,639	5,158	4,910	2,911	965	21,729

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TABLE No. 22.

Present annual output of logs in thousand feet, board measure, shipped outside the county for manufacture—by counties and species.

TRADEWATER DISTRICT.

COUNTIES.	Total	Gum	White oak	Black oak	Poplar	Ash	Elm	Beech
Livingston	230	150	20	.....	30	.....	.....	.....
Crittenden	5,036	789	2,080	644	1,087	.....	.....	.....
Caldwell	275	.....	225	48	2	.....	.....	.....
Lyon	20	8	4	3	.....	.....	.....	.....
Trigg	475	150	90	85	.....	.....	.....	70
Christian	1,921	646	583	250	.....	28	56	140
Todd	60	.....	.....	.....	.....	.....	.....	60
Muhlenberg	5,800	2,491	930	1,038	120	116	232	340
Hopkins	4,553	1,356	1,124	891	317	56	141	280
McLean	18,665	8,155	2,754	4,282	276	973	588	170
Webster	855	588	67	175	25	.....	.....	.....
Union	545	37	328	60	67	.....	.....	.....
Henderson	1,280	286	225	564	90	.....	17	.....
Daviess	1,700	545	350	380	60	60	60	.....
Total	41,415	15,201	8,780	8,420	2,074	1,233	1,094	1,060

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TABLE No. 22—Continued.

COUNTIES.	Maple	Hickory	Sycamore	Cypress	Cottonwood	Chestnut	Walnut	Scattered
Livingston	.....	.....	.....	30	.....	.....	.....	.....
Crittenden	36	275	122	.....	.....	.....	3	.....
Caldwell	.....	.....	.....	.....	.....	.....	.....	.....
Lyon	.....	5	.....	.....	.....	.....	.....	.....
Trigg	.....	80	.....	.....	.....	.....	.....	.....
Christian	.....	42	42	.....	28	.....	50	.....
Todd	.....	.....	.....	.....	.....	120	.....	.....
Muhlenberg	112	174	84	.....	28	.....	15	.....
Hopkins	161	115	84	.....	28	.....	.....	.....
McLean	621	52	85	665	44	.....	.....	.....
Webster	.....	.....	.....	.....	.....	.....	.....	.....
Union	.....	30	10	.....	.....	.....	5	8
Henderson	.....	50	28	15	5	.....	.....	.....
Daviess	10	10	150	.....	75	.....	.....	.....
Total	996	833	605	710	208	120	73	8

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TABLE No. 23.

Present annual output of lumber in thousand feet, board measure (excluding lumber from logs cut in other counties)—by counties and species.

TRADEWATER DISTRICT.

COUNTIES.	Total	Black oak	White oak	Gum	Poplar	Hickory	Beech	Sycamore
Livingston	3,261	1,218	690	691	188	21	4	370
Crittenden	6,811	2,444	2,585	783	527	278	.....	82
Caldwell	4,915	1,939	1,613	404	277	160	464	40
Lyon	4,601	1,543	908	1,572	241	12	.....	170
Trigg	2,288	1,183	597	50	408	30	.....	.....
Christian	9,459	4,007	3,137	155	1,117	526	114	166
Todd	4,708	1,588	2,321	170	292	123	30	6
Muhlenberg	12,957	3,362	3,652	2,032	947	904	1,767	90
Hopkins	10,618	2,910	2,715	1,946	1,219	983	270	145
McLean	3,280	383	606	1,421	235	50	.....	200
Webster	7,485	2,980	2,121	1,430	299	494	.....	61
Union	3,142	673	793	779	163	118	.....	75
Henderson	8,050	2,296	1,340	3,030	190	144	.....	235
Daviess	10,300	3,510	2,680	2,860	195	750	.....	50
Total	91,875	30,036	25,758	17,323	6,298	4,593	2,649	1,690

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TABLE No. 23—Continued.

COUNTIES.	Elm	Maple	Cypress	Ash	Cottonwood	Walnut	Pine	Chestnut	Scattered
Livingston	48	2	.....	7	.....	1	.....	.....	21
Crittenden	63	.....	.....	49	.....	.....	.....	.....	.....
Caldwell	.....	18	.....	.....	.....	.....	.....	.....	.....
Lyon	55	.....	.....	.....	100	.....	.....	.....	.....
Trigg	.....	.....	20	.....	.....	.....	.....	.....	.....
Christian	21	.....	.....	107	.....	23	.....	.....	86
Todd	3	38	.....	10	.....	5	20	16	86
Muhlenberg	72	53	.....	60	.....	10	.....	.....	8
Hopkins	100	330	.....	.....	.....	.....	.....	.....	.....
McLean	35	50	250	50	.....	.....	.....	.....	.....
Webster	50	25	.....	25	.....	.....	.....	.....	.....
Union	330	27	110	10	47	.....	.....	.....	17
Henderson	479	146	95	75	20	.....	.....	.....	.....
Daviess	35	35	100	60	.....	25	.....	.....	.....
Total	1,291	724	575	453	167	64	20	16	218

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TABLE No. 24.

Present annual output of miscellaneous material—by counties.

TRADEWATER DISTRICT.

COUNTIES.	SAWED TIES.			Total number.	HEWED TIES.			Total number.
	White oak	Black oak	Softwoods		White oak	Black oak	Softwoods	
Livingston	15,597	29,089	21,188	65,874	38,920	71,392	19,116	129,428
Crittenden	5,400	2,000	2,750	10,150	45,617	90,070	27,800	163,487
Caldwell	1,100	4,200	.....	5,300	2,100	2,600	500	5,200
Lyon	21,500	60,800	21,000	103,300	16,400	66,600	16,000	99,000
Trigg	91,420	181,880	11,200	284,500	137,870	177,980	37,150	353,000
Christian	16,065	10,375	.....	26,440	30,000	15,800	.....	45,800
Todd	19,638	4,485	2,170	26,293	83,980	17,990	14,830	116,800
Muhlenberg	24,380	24,260	15,060	63,700	34,006	80,006	33,200	147,212
Hopkins	6,100	8,125	19,050	33,275	15,550	22,800	18,650	57,000
McLean	55,240	55,480	110,480	221,200	195,910	196,870	392,020	784,800
Webster	25	62	163	250	51,550	58,800	7,650	118,000
Union	25	62	163	250	746	510	650	1,906
Henderson	.....	.....	.....	.....	375	10,075	10,075	20,525
Daviess	.....	.....	.....	.....	800	11,200	12,000	24,000
Total	256,490	380,818	203,224	840,532	653,824	822,693	589,641	2,066,158

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TABLE No. 24—Continued.

COUNTIES.	Staves, number.	Heading, number	Spokes, number	Mining timbers in terms of props, number	Handles, number	Hoops, (M)	Shingles, (M)	Cordwood cords
Livingston	.....	.....	.....	.....	.....	.....	.....	.....
Crittenden	.....	538,570	.....	.....	.....	.....	.....	10
Caldwell	.....	57,140	.....	.....	.....	.....	.....	.....
Lyon	.....	.....	.....	.....	.....	.....	.....	660
Trigg	.....	.....	10,000	.....	.....	.....	.....	.....
Christian	.....	.....	.....	15,400	.....	175	200	679
Todd	200,000	.....	.....	.....	.....	.....	.....	.....
Muhlenberg	808,000	411,000	.....	465,100	.....	17	.....	.....
Hopkins	5,666,000	400,000	.....	613,400	.....	.....	.....	.....
McLean	100,000	807,000	.....	.....	.....	.....	.....	.....
Webster	360,000	.....	.....	35,900	.....	600	2,000	.....
Union	.....	495,715	.....	148,100	.....	.....	.....	.....
Henderson	.....	.....	.....	118,700	41,660	.....	500	.....
Daviess	.....	.....	150,000	57,000	.....	.....	.....	.....
	.....	.....	.....	102,600	.....	.....	.....	.....
Total	7,134,000	2,709,425	160,000	1,456,200	41,660	792	2,700	1,349

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TABLE No. 25.

Present annual output of timber by counties, computed in thousand feet, board measure.

TRADEWATER DISTRICT.

COUNTIES.	Total	Logs	Lumber	Ties	Spokes	Handles
Livingston	10,864	230	3,261	7,373	.....	.....
Crittenden	19,484	5,036	6,811	6,878	.....	.....
Caldwell	5,655	275	4,915	385	.....	.....
Lyon	12,354	20	4,601	7,403	.....	.....
Trigg	26,378	475	2,288	23,603	12	.....
Christian	14,803	1,921	9,459	2,713	.....	.....
Todd	11,699	60	4,708	5,548	.....	.....
Muhlenberg	35,791	5,800	12,957	8,012	.....	.....
Hopkins	22,870	4,553	10,618	3,389	.....	.....
McLean	61,685	18,665	3,280	38,765	.....	.....
Webster	14,651	855	7,485	4,728	.....	.....
Union	4,587	545	3,142	85	.....	50
Henderson	10,671	1,280	8,050	821	180	.....
Daviess	13,063	1,700	10,300	960	.....	.....
Total	264,555	41,415	99,875	110,663	192	50

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TABLE No. 25—Continued.

COUNTIES.	Staves	Heading	Cordwood	Shingles	Hoops	Mining timbers
Livingston						
Crittenden		754	5			
Caldwell		80				
Lyon			330			
Trigg						
Christian	200		340	20	58	92
Todd	808	575				
Muhlenberg	5,666	560			6	2,790
Hopkins	100	1,130				3,080
McLean	360			200	200	215
Webster		694				889
Union				50		715
Henderson						340
Daviess						103
Total	7,134	3,793	675	270	264	8,224

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The total output for a single year is estimated at nearly 250 million board feet, or about one-eighth of the remaining timber. The value of this material, in the form in which it leaves the district, or in which it is finally consumed within the districts, is estimated to be $3,700,000. These figures emphasize the importance of maintaining the timber industry by increasing the productivity of the forests that yet remain.

THE FOREST.

Western Kentucky, as part of the central hardwood region, is characterized by the broken distribution of its forests and by the variety and excellence of the hardwoods that compose them. Few regions of the world are enriched by a greater number of merchantable species. Among the various kinds generally represented, the oak is of supreme importance, at present comprising about 55 per cent of the entire stand. In the virgin forests, where the law of natural selection, unhindered by man, had determined the proportion of species, the white oak group surpassed the black oak in size and number. But the superior quality of the white oak has resulted in its removal to such an extent that the black oaks now exceed the white oaks among the merchantable timber. This condition has been promoted by the superior sprouting capacity of the black oaks and their greater resistance to fire. Among the most important black oaks are the black, pin, Spanish, Texan and red oaks, named in the order of their abundance in the present forests. The white, bur and post oaks are the most abundant in their group. Next to the oaks come the gums, which form 13 per cent of the stand, with red (or sweet) gum as the important species. Hickory, with the shagbark and pignut as chief representatives, comes next in abundance, followed by beech and maple. Such valuable species as ash, elm, poplar, walnut and cherry, never forming a very large proportion of the forest, have been heavily cut. The only native representative of the conifers is the cypress, which occurs sparingly along a few of the streams. The locust and catalpa are insignificant as members of the present stand, although of importance because of their possibilities for planting.

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The forests of this region may be separated on a topographic basis into two general types, the bottomland and upland forests. The bottomland forest is more valuable, but confined to a much smaller area than the upland. It is doomed to practical extinction because of the fertility of the soil on which it grows, while the upland type will be maintained over wide boundaries. In addition, a temporary type has appeared, as a result of the clearing and subsequent abandonment of fields, which may be designated as the "old field" type.

Bottomland Type.—Red gum is the characteristic tree of the bottomland type. Its most important associates are the oaks, especially the pin oak, Texan red oak, cow oak, bur oak and swamp Spanish oak, together with shagbark and mocker nut hickory, and the sugar and silver maples. Elm, ash, hackberry, willow and overcup oak, sycamore, black gum and yellow poplar are also common. Sweet gum is the most widely distributed tree, both in large groups and in intimate mixture with its associates. The various species of oak tend to arrange themselves in groups, the pin, willow and overcup oaks usually in the wettest places, and the cow and bur oaks on the best drained situations, with swamp Spanish oak on intermediate sites. Hickory and maple have a similar tendency, while the elm, ash, poplar and black gum occur singly. Cypress is sometimes found along the creek banks, while honey locust and catalpa are only occasional trees. The underbrush is characterized by the presence of dogwood, winged elm, willow, river birch and cat-brier. Under virgin or nearly virgin conditions, the forest is very dense, with scanty underbrush and little ground cover.

Where light cuttings have been the rule in this type, the chief effect of lumbering has been to increase the percentage of sweet gum. As logging must be carried on in the summer and fall, owing to the wet conditions at other seasons of the year, the oaks are cut at a time which is very unfavorable for sprout reproduction. In addition, oak seedling reproduction is hindered by the grazing of hogs, which feed on the acorns. Both of these factors operate especially against the maintenance of the original proportion of white oak, as timber of this species is cut more heavily and its acorns are sweeter than the black oak. Valuable species other than the white

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oaks, that have been culled out from forests of this type, usually maintain their proportion among the reproduction fairly well.

Where heavy logging operations are carried on in the bottomland type and all the timber now considered merchantable is removed, the land is usually left in very bad condition, unless it is drained and cleared for farming. The wetter parts become densely covered with briars and brush, in which the reproduction of forest trees has little chance, unless of rapid growth like the sweet gum. The drier parts sometimes become covered with thickets of scrubby hickory and shrubs. The sudden exposure of the soil and the drying out of the surface in the late summer and fall, often in connection with fire, results in these unfavorable conditions. Where shrubs are not so abundant, grass and weeds may take possession, with scanty tree reproduction.

Autumn fires are common in this type, especially on cut-over lands, but are not regarded as serious by the people until they begin to destroy fencing and adjacent corn fields. They are often set to clear out the brush for the benefit of live stock. Besides their direct effect in the destruction of young frowth, they remove the litter and harden the surface of the soil in the drier situations, rendering it unfit as a seed bed, especially for the species that germinate in the fall.

Upland Type.—The upland type is characterized by the predominance of the black oaks and hickory. The white oak, although still forming a large percentage of the valuable timber, is heavily culled and is often of inferior quality. Black oak, Spanish oak, hickory, scarlet, red and post oaks are of the greatest importance on the slopes and ridges. In the hollows and coves, beech, maple, gum and elm are also found, and less frequently, ash and walnut. The characteristic underbrush consists of sassafras, red maple, dogwood and black oak sprouts. In its present condition, the upland forest is open and irregular, with a more or less grassy floor. It has nearly all been heavily lumbered, and consequently the average size of the trees is small. As a type, it does not equal the bottomland forest in thriftiness and rapidity of growth. This condition is a result of the thinner and less fertile soil of the uplands, and the greater ease with which the timber can at all seasons be removed.

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Fire is one of the chief factors in the deterioration of this type. It allows the reproduction of the inferior black oaks and of post oak to make headway against the more valuable but less resistant species. In addition, it weakens the larger trees and destroys the much needed humus in the soil. The mature trees that are stagheaded and afflicted with fungous and insect diseases, so often found in large numbers, are usually fire-scarred at the butt. Repeated fires on cut-over lands, especially on the upper slopes and ridges, have resulted in considerable areas covered with worthless thickets of pignut hickory, black jack and post oak. Damage to this type, which must be considered as the permanent source of the local timber supply, is very serious.

Old Field Type.—The old field type is a temporary one, in which fields which have been cultivated and abandoned are reverting to their original forest cover. It is found in many different stages, depending upon the length of time that has elapsed since the abandonment of the clearing. The first step in natural reforestation is the appearance of sassafras and persimmon, sometimes accompanied by sweet gum and poplar. Later, hickory is likely to gain foothold and is followed by maple and oak establishing themselves in irregular patches. Often a scattering of locust, catalpa and red cedar becomes established, spreading from planted trees. The greater part of this type is in the earliest stage of development.

FOREST MANAGEMENT.

Bottomland.—The character of management in this type depends upon whether the forest in question is to be cleared within a relatively short period, or whether it is to be regarded as permanent, either because of the difficulty of drainage or for its value as a farm woodlot.

The increasing demand for agricultural land will undoubtedly require that forests on land, not now needed for this purpose, will have to be cleared within a few decades. In this case, all measures taken solely to secure reproduction are useless, because there would not be time for the development of a crop from seed or sprouts. The aim should be to cut in such a way as to secure a second crop of the greatest value in 10 to 20 years, when the final cutting will be made and the land turned over to agriculture. This second crop

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will consist of immature trees now standing, and the problem is to give them proper room for development and stimulate their growth, so that a full stand will be secured at the time of the final cutting. It is best to cut conservatively at present and get as full a stand as possible for the final cutting, in order to secure both the benefits of the greatest possible increase of volume as well as the probable increase of stumpage value due to scarcity of timber. This may be accomplished by cutting to a high diameter limit, say 18 inches diameter breasthigh, viz.: 4½ feet from the ground. If such a cutting does not give sufficient growing to the thrifty young trees of valuable species, the pin oak and other inferior species should be cut to a lower limit, 12 to 15 inches. Trees under the limit which, because of incipient decay or for other reasons are not likely to survive until the final cutting, but which will now yield merchantable timber should be removed at the same time. The best results will be obtained by marking the trees to be removed, varying the diameter limit to suit the conditions in every case. This work can best be done by a trained forester. Since reproduction is not considered, the restriction of grazing is not necessary, but care should be taken to keep out fire for several years after logging until the slash has rotted, so as to avoid injury to the young timber.

Where the object is to maintain a productive forest indefinitely, the problem of securing suitable reproduction becomes of immediate importance. On better drained situations, ash, poplar and white oak should be encouraged, while in wetter places red gum should be the chief species among the young growth. Three to six seed trees of these species, if present, should be left on every acre and, with this restriction, the cutting may be made with an elastic diameter limit in the same way as described for the previous case. Where the seed trees of valuable species are available, inferior trees, especially pin oak, should be cut as close as market conditions permit. In this way, stands of pin oak may, in the next generation, be replaced by red gum, or other rapid-growing and valuable species. The seed trees and those below the present limit of cutting can be taken out in twenty to thirty years.

Upon areas that are being restocked in this way, it will be necessary to exclude hogs and cattle until the young growth is large enough to be out of danger from their depredations. This exclusion should begin one year before and continue

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about ten years after the first cutting. During the late summer and autumn, care should be taken to prevent and extinguish fires which would destroy the young trees.

Upland.—The chief problem in the management of the upland forests is to check the present deterioration and restore the proportion of more valuable timber. As the coal mines afford a good market for small material, there is no reason why the inferior timber cannot be cleaned out. Nevertheless, this is not being done, because the prop cutters prefer to split props out of large, straight-grained trees as long as such trees can be obtained. The general use of sawed and round props would prevent waste of saw-timber that is entirely unwarranted, and at the same time to improve forest conditions by cleaning out inferior trees and making room for the reproduction of better species. The forests of this type have, as a rule, been culled so often that the further removal of ash, walnut or white oak is not advisable, if indeed there remains any to remove. Next to these species, black, Spanish and red oaks and sweet gum should be encouraged. The aim should be to produce large timber only on the best soil and to grow large quantities of prop, post and tie material elsewhere. Where heavy logging or repeated fire has entirely destroyed the reproductive capacity of the forest, planting will be necessary if a productive stand is to be obtained within a reasonably short period of time. The selection system of cutting is on the whole best adapted to this type, and may be applied with a high-diameter limit when large timber is desired, and with a low limit when smaller material is the object of management. Where the stand is entirely of oak and props or ties are to be raised, clean cutting with sprout reproduction may be used. But the most essential measure, that must be taken in connection with any plan, is protection from fire. Old roads may be cleaned out to serve as fire lines and careful watch should be kept in dangerous seasons. Reliable men, living in the vicinity of timber tracts, may be hired to devote a small part of their time to this work with good results. While reproduction is being established, grazing should be prohibited.

Old Field.—In the case of old fields, which have been abandoned so long that they have nearly reverted to forest, the same plan of management may be used as recommended for the upland type. Where a large amount of sweet gum

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has come in naturally, it may be profitable to let it grow to prop or tie size. In most cases, it will be necessary to plant, if it is desired to re-establish a well-stocked forest. Black locust and catalpa, the latter in the better situations, may be planted for posts and props, while for larger material a mixture of black walnut with maple, beech or catalpa might be tried if the soil is fairly good. A mixture of poplar and sweet gum would probably be successful, while conifers such as white pine and European larch might be tried in an experimental way. Locust is excellent where the soil washing is bad, because of its tendency to spread by underground roots. Fire protection and restriction of grazing is as necessary here as in the upland type.

COUNTY DESCRIPTIONS.

LIVINGSTON COUNTY.—Livingston County, with an area of 244,480 acres, is located on the Ohio River, between the Cumberland and Tennessee rivers, above the mouth of the latter which forms its southern boundary. Outside of the flat land on the main streams, the topography is rough with hills rising 200 to 300 feet above the streambeds.

No railroad enters this county, but the above mentioned rivers afford excellent water transportation. The cost of hauling may be decreased by improving the wagon roads.

The valuable timber is largely removed, but about 25 small saw-mills are still in operation and tie making is carried on to some extent. There is no market for material smaller than ties. Over half of the fostered area is of the upland type, of which the greater part is absolute forest land. The heavily culled forests should be improved by restricting the tie cutting to inferior species, giving the young growth of white oak, gum and poplar a chance to produce larger timber and to bear seed.

CRITTENDEN COUNTY.—Crittenden County covers approximately 249,600 acres on the Ohio River below the mouth of the Tradewater. The southern and central parts are a rolling country of moderate slopes, while to the north and northeast the topography is more rough and broken. Water transportation is well provided for in the Ohio and Tradewater rivers, while the Louisville and Nashville Railway crosses the cen-

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tral part of the county. The roads, many of which are graded by machinery, are in a fair condition.

The chief industries are agriculture, lumbering and mining. Coal is obtained in restricted localities and deposits of zinc and fluorspar are now worked. Nearly all of the better land is cleared for farming, and from the non-agricultural soil nearly all of the valuable timber has been removed. Small mills, about thirty in number, still continue to operate, and numerous small shipments of timber are made.

The bottomland type of forest exists only in small woodlots, as it has largely given way to agriculture. The upland type is more important, and practically all of the situations now occupied by this type are absolute forest land. Several long, low ridges, locally known as "bluffs," run in a north and south direction through this county and form a large percentage of the forest land. They are covered with a small growth of post oak, scarlet and black oak, elm, hickory and other species, from which the more valuable trees have been cut. Only one tract of valuable timber of over 100 acres is left in the county. The forest being largely depleted of its more valuable trees, especially of white oak, poplar and hickory, the aim of management should be to restore these species to their proper proportion in the stand.

CALDWELL COUNTY.—Caldwell County, with an area of 216,320 acres, lies on the divide between the waters of the Cumberland and of the Tradewater, the latter river forming the northeast boundary line. The county varies from 300 to 500 feet in elevation above sea level, with a gentle, rolling topography, which becomes rougher in the neighborhood of the Tradewater where the coal fields begin. In the western part, the underlying rock is largely limestone.

Water transportation is little used, although timber can be floated down the Tradewater and its tributary, Dolliver Creek. The Illinois Central provides the county with adequate railway service by its two main lines which cross at Princeton, the county seat. Highway improvement is provided for by special county fund, as well as by "calling out the hands," and roads are for the most part in fairly good condition.

Caldwell is primarily an agricultural county, raising tobacco, corn and livestock. Nevertheless, there are 22 small mills in operation, sawing ties and lumber. Much of the

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better grades of lumber are shipped out for car and wagon stock, and the poorer material is used locally for construction of tobacco barns and other purposes.

The main body of the forest is in the eastern part of the county, where it covers two-thirds of the land, but elsewhere it is scattered in small woodlots. It is heavily culled or composed entirely of second growth, and, as a rule, the stand contains too large a proportion of the less valuable species. About eight per cent of the county consists of old fields, with badly washed soil. It would probably pay owners to plant up this abandoned land to locust, as there is a good and increasing demand for posts. About one-third of the whole county is now wooded and probably one-sixth should remain permanently under forest cover.

Lyon County.—Lyon is a small county of 144,640 acres on the Cumberland River, between Trigg and Livingston. With limestone as the chief underlying rock, the county is characterized by moderate slopes and low hills, becoming more rugged in the northern part. The Cumberland flows through the middle of the county and the Tennessee on the eastern boundary, thus dividing the drainage. These two streams are separated by a long, broken ridge.

In addition to the transportation facilities afforded by the two rivers, the Illinois Central railroad extends through the county from east to west, passing through Eddyville, the county seat. The roads may be improved, thereby reducing the cost of hauling forest products. Over a dozen saw-mills, together with the tie makers, yielded in one season (1907-8) an output of about 12 million board feet. At this rate of cutting the present supply of timber would be exhausted in about thirteen years.

It is safe to say that half of the present wooded area is absolute forest land. Of the present forest, slightly over half is classed with the upland type. A large tract, extending from Trigg into the southern part of this county between the rivers, is covered to a large extent with an even-aged second growth, the result of clear cutting the original forest for charcoal. Forestry is now practiced on a portion of this area.

Trigg County.—Trigg County is on the Tennessee line, between Christian County on the west and the Tennessee River on the east. This river is paralleled eight to ten miles east by the Cumberland, which, with its tributaries, drains the

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greater part of the county. The ridge between the rivers rises nearly 300 feet above them, with a short, abrupt, west slope and a gentle east slope. East of the Cumberland, is a rolling country with low hills. The area of Trigg County is 307,840 acres. Good water transportation is afforded by the two navigable streams, together with the principal tributary of the Cumberland, Little River, which is available for floating timber and ties. Rail transportation is not so good as in most of this region. A line from Cadiz, the county seat, connects with the Illinois central, which cuts across the northeast corner of the county.

Agriculture is of the greatest importance, especially east of the Cumberland. Of the forest industries, tie making is the chief, with an estimated output of 638,000 ties, 90 per cent of the total output of forest products. There are about 16 saw-mills, in operation. Except for a few comparatively small holdings in the south-central part, and one good tract in the north-central section of the county, the best timber is practically gone. Sixty per cent of the land is in forest, of which about one fourth is of the bottomland type. About 10 per cent of the total area is in old fields and probably 30 per cent may be regarded as absolute forest land.

Fire has done serious damage, killing half-grown trees over large areas. Protection from fire is essential for the well-being of the forest. The enforcement of a stock law would also be of great benefit to the young growth. Conservative forest management should be applied, with the purpose of increasing the productivity of the forests and obtaining a permanent supply to meet the most urgent demands. This policy is being carried out, with the advice of the Forest Service, on a tract of coaled-over, sprout land, located between the Cumberland and Tennessee rivers. The charcoal industry makes very close utilization possible, and the inferior and defective trees may be removed down to two inches in diameter, leaving 20 to 30 thrifty young trees of the better species per acre to produce ties and sawlogs. Where there is no market for such small material, methods can not be so intensive and the improvement of the stand must be brought about more slowly, by cutting the inferior species as close as market conditions permit.

Christian County.—Christian County contains approximately 444,000 acres, and is on the southern boundary of the

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State. It occupies the divides between three rivers, the Pond and the Tradewater rivers draining to the north, and the Cumberland tributaries to the south and southwest. The topography of the southern portion is generally undulating, but grows rougher toward the north, culminating in rugged hills on the north boundary. The subcarboniferous limestone of the southern part of the county passes into the true coal measures in the northern part, where lime and sandstones predominate.

Three railroad companies serve the county, the Tennessee Central, the Illinois Central and the Louisville & Nashville, the last with two parallel lines. About 153 miles of excellent piked roads radiate from Hopkinsville, the county seat. The dirt roads are in fair condition in the southern part of the county, but become much rougher in the hills. About 35 saw-mills are scattered throughout the county, and in the northern part the tie industry is of great importance. There also is a good demand for mine props in that section, and small oaks are further utilized for insulator pins and cross-bars.

The upland type predominates in this county, including over 90 per cent of the forested area. The southern part of the county is a woodlot section, while in the north the timber is in larger tracts. Owing to the large area of sloping land, where protection from soil erosion is necessary, the proportion of absolute forest land may be placed as high as 20 per cent.

The prospect for the introduction of fairly intensive methods is good, because of the demand for small material. Inferior species should be utilized, so as to give the best trees a chance to maintain their proper proportion in the forest. It is time that mine owners begin to handle their woodland conservatively, in order to provide for a future supply of props.

Todd County.—Todd County contains 238,720 acres and lies east of Christian County on the Tennessee line. The divide between the waters of Green River and the Cumberland crosses the northern portion. In soil and topography, it is very similar to Christian County, the southern portion being a rich agricultural section, while in the northern part the country becomes rough and hilly, the cliffs often rising precipitously for 100 to 150 feet above the stream bed. The

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Louisville and Nashville affords railway service in the southern end of the county, with a branch line from Guthrie to Elkton, the county seat. The roads require considerable improvement, in order to cheapen transportation.

Forest conditions are very similar to those of Christian County, but the timber market is not so favorable to the practice of intensive forestry. There is a good demand for rough lumber, ties and slack cooperage stock, but practically no market at present for smaller material. Nevertheless, careful methods of logging can be substituted for the present system of taking out every merchantable stick and disregarding entirely the young growth. Protection from fire and stock should be secured as soon as possible and more intensive methods of forestry can be applied with the improvement of market conditions.

MUHLENBERG COUNTY.—Muhlenberg lies on the southern border of the western coal fields. and is one of the largest coal-producing counties of the State. The topography is rolling and the soil of the uplands, which varies from sand to clay, is not rich. The extensive bottoms along the rivers and smaller streams are quite fertile, but on account of the difficulty of drainage have largely remained in forest growth.

Transportation facilities are excellent. Several large streams penetrate and border the county, Green River on the northeast being navigable for steamboats at all times of the year. Two railroads, doing an immense amount of coal carrying, cross the county diagonally so that only a very small corner is over 10 or 12 miles from railroad transportation. The wagon roads, worked by the county with improved machinery, are all of dirt, but are in good condition except on the rocky hills. These steep portions can not be worked with graders, and more attention is needed to put them in good condition.

Muhlenberg County has an area of 280,320 acres, nearly 40 per cent of which is still in forest growth, but probably not over 20 per cent is absolute forest land. The woodland, which has an average stand of about 1,800 feet per acre, is confined chiefly to the rougher and poorer hills and slopes and to the low, undrained bottoms . The latter are now being rapidly cleared up and put in crops. A few tracts have still considerable white oak and some second-growth poplar on them, but the first-quality white oak is fast disappearing.

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There are about 60 saw-mills in the county, cutting over 12 million feet of lumber a year. The greater part of this is beech and gum, used locally, but some white oak and hickory for vehicle, implement and furniture stock is cut and shipped to near-by markets.

Probably 25 per cent. of the total area of the county is now old fields, part of which is washed so badly that it can not be profitably farmed. Much of this land is now covered with a scattered stand of sweet gum, sassafras, poplar, etc. Sweet gum seems specially adapted to these lands and should be encouraged in every way possible. It is in great demand for saw-timber and even when of pole size is as good as anything for mining props, for which there is a large demand.

Fire has been very destructive in many parts of the county. Although coal and timbered owners deprecate it, very little attention is given to the matter. In one case, however, an owner has installed a system of telephones as a protection. Coal companies, who are wondering where their further supply of timber is coming from, should take all possible precautions to reduce this fire injury.

Hopkins County.—Hopkins County lies between two floatable streams—Pond River, a branch of Green River, on the east, and the Tradewater on the west. Its area is approximately 355,200 acres. The country is for the most part low and rolling, but south of Madisonville it becomes rougher and the bottoms are separated by irregular ranges of steep and rocky hills. Practically all of the county is underlaid by coal, which is being mined in large quantities along the railroads.

The transportation facilities are good. The Illinois Central traverses the southern part, while the Louisville & Nashville operates a main line north and south through the central part of the county, besides the Morganfield branch running northwest from Madisonville. A new railroad, still in process of construction, extends east from Madisonville. The roads, which are supported by taxation, are in fair condition, except in the hills, which are too rough for the operation of ordinary road-making machinery.

The chief industries are coal mining, agriculture and lumbering. A great deal of timber has been exported in the past, but the amount shipped out of the county is de-

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creasing rapidly, owing to the local demand caused by an increasing population and to the great development of coal mining. Thirty or more small mills are in operation, sawing rough lumber, carriage stock and mining timbers.

About 10 per cent of the untilled lands may be classed as old field, one-third as bottomland and the remainder as upland forest. Much of the bottomland will be cleared and drained, but the upland timber should be handled so as to secure a permanent timber supply, especially of small material for mining purposes. Coal companies will find it very profitable to make their surface holdings productive in this way. A good beginning has been made by a mining company, which owns large bodies of timberland from which they cut only dying and dead trees, at the same time protecting from fire by the use of fire lines and guards. They are also planting locust, catalpa and walnut on old fields, and walnut and yellow poplar in open places in the forest. The outlook is bright for intensive forest management on the part of mining companies and others in this county.

McLean County.—McLean County, with its 161,920 acres of land, lies on Green River above Daviess County. It is about evenly divided between the low-hill country in the northeast and southwest portions and the flat land in the valleys of the Green River and tributary streams. The river furnishes excellent facilities for the exchange of merchandise and the floating of forest products to the Evansville market. The Louisville & Nashville Railway runs north and south through the eastern part of the county.

The greater part of the output of forest products is floated out in the form of logs and ties, although 15 small sawmills, as well as stave, spoke and chair factories are in operation. Agriculture is increasing in importance, as the rich lowlands are being cleared and drained. About 10 per cent of the county is more valuable for forest growth than for agricultural purposes. The land of this type is located in the hill country on the steeper slopes, where protection from erosion is necessary. The lowland forest is now valuable for its heavy stands of gum, white oak and other good timber, but it can be regarded as merely a temporary source of supply.

Fire protection, essential as it is to the improvement of the forests, is not attempted, except where buildings and

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fences are threatened. A distinct advance, however, has been made in the line of restricting grazing. Nine of the 12 precincts in the county have adopted the stock law, compelling owners to fence their own stock, and the people seem to be well pleased with its workings.

WEBSTER COUNTY.—Webster County is between the Green and Tradewater rivers, covering 227,200 acres, of which about one-fifth is bottomland. Between the flood plains of the sluggish streams, irregular ranges of hills rise up to an elevation of over 600 feet above sea level, or over 200 feet above the stream beds.

In addition to the two rivers on the east and west boundaries, three railroads give excellent transportation facilities. The Louisville & Nashville Railway traverses the county on the east with its Henderson Division, and on the southwest with its Morganfield branch from Madisonville. The Illinois Central has a branch from Blackford to Dixon, the county seat, while the Kentucky Valley operates a line from Providence to Wheatcroft. The wagon roads are kept in fairly good condition by modern machinery, the cost coming out of the general fund. Coal mining thrives in the southwestern part of the county, and keeps the three railroads in that section well supplied with business. Lumber, ties and props are the chief forest products and 20 small saw-mills are in operation.

About three-quarters of the present forest is of the upland type. Perhaps 10 per cent of the county may be classed as absolute forest land, including many of the old fields, too poor and washed for cultivation. The young growth is not very promising and the usual succession of logging and fire, often combined with grazing, has resulted in large areas covered with scrubby hickory and oak sprouts, mixed with dogwood and other shrubs.

In the western part of the county there is a good demand for mining timber and props, as the mines use nearly a million board feet a year. Rather intensive forest management should be possible here, but nothing has been done along this line, except by one company, which is beginning work similar to that which has been undertaken in Hopkins County. This company is also creosoting the timber to be used in situations where durability is required.

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UNION COUNTY.—Union County, with an approximate area of 247,700 acres, lies along the Ohio River, and is one of the fine agricultural counties of the State. The topography is rolling and the soil is a sandy loam, except along the Ohio, where the rich alluvial bottoms extend for considerable distances from the river. Wheat, corn and tobacco are the principal crops raised, while many well-bred cattle and hogs help to make farming profitable.

Union lies entirely within the western coal field. Although coal mining is carried on extensively, very little of the land is owned in fee by coal companies. However, 14 per cent of the total area of the county is held by them under mineral leases. Railroad and river transportation facilities are excellent, and the roads are in good condition.

Approximately five per cent of the county is still uncleared and supports some kind of forest growth. Three types of forest are represented—upland, bottomland and pure locust. The upland type is largely an oak forest, with contain a stand of 4,000 to 5,000 feet per acre, but the most of the better trees culled out. Some small areas still average will not greatly exceed 1,000 board feet. Probably 60 per cent of the woodland of the county is of this type, and as it occupies the poorest soils, it should be kept as much as possible in forest growth, to furnish wood for all kinds of domestic uses and for mining props.

The bottomland forest is confined to the lowest, poorest drained land along the Ohio River and the smaller streams. A few small tracts are still left, which contain good stands of cottonwood, gum, red oak, hickory and other trees. A little cypress is also found on the streams. The greater part of this type, however, has been culled repeatedly, until there is very little timber left. Clearing and draining is going on at the same time, and in a few years many of these swamp forests will be converted into rich cornfields.

From five to ten per cent of the woodland in this county is pure locust, either planted or come up naturally from sprouts. It was estimated by one landowner that 300,000 locust plants had been set out in the county in the past six years, while some growers are as much as 20 years old. Locust grows rapidly, and seems to thrive almost anywhere on the uplands, but on the bottoms it is often killed by the borers.

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HENDERSON COUNTY.—Henderson County, situated on the Ohio River, contains approximately 265,000 acres. Extensive bottoms occur along the Ohio and Green rivers, and much of the middle part of the county is level and swampy in places. Probably two-thirds of the county consists of rolling hills or upland with a sandstone soil, the greater part of which is cleared and in cultivation.

Transportation facilities are good. Both of the large rivers are navigable and form an outlet for the greater part of the timber products of the county. Two railroads cross the county in different directions, intersecting at Henderson, the county seat. The wagon roads, which are in excellent condition, are supported by taxation. Twenty per cent of the total county tax is appropriated for dirt roads, and a similar amount for the construction and maintenance of pikes. Six miles of new macadam road are made each year.

Coal mining is carried on over the greater part of the county, and the timber used is largely bought from farmers. The forest land in Henderson County is now largely confined to the extensive bottoms. Much of it has been considered too wet to clear and has in many seasons been even too wet to log. But with the rise in value of both timber and land, this bottomland forest is rapidly being cleared of the greater part of the merchantable timber. Some small areas of upland woodlots have some fine timber still left standing, but these are cases where the owners have refused to sell. The majority of woodlots have been severely culled and there are now over 20 small saw-mills cutting timber, for the most part from bottomlands that will eventually be cleared.

Henderson is one of the few counties in this district that has adopted the stock law. Stock are not allowed to run at large, and everyone has to take care of his own animals. The farmers seem very well satisfied with this arrangement.

Owing to the lack of durable timber for posts, many farm fences are in bad condition. White oak, which lasts only a few years, has generally been used for this purpose. There is much land especially in the southern part of the county, where locust could be grown with profit, and the

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production of durable fence posts seems to be one of the chief timber needs of the county.

DAVIESS COUNTY.—Daviess County has an area of 283,200 acres, about one-third of which is an upland region of low hills, while the remainder is generally level. The soil varies from the river sand and alluvium to clay on the upland. The Ohio river on the northern boundary and the Green River on the western, together with the three lines of railroad that cross the county, make Daviess one of the best provided counties of the group in the matter of transportation facilities. The road system is also excellent.

Primarily, this is an agricultural section, and the many wood-working plants in Owensboro draw principally upon outside sources for their raw material, depending only to a small extent upon the local timber supply. The market for cordwood and small material is poor, as coal is used instead of wood for fuel, and there are not enough mines to make a good general demand for props.

The bottomlands still possess some valuable forests, but are being cleared for cultivation rapidly. The upland forest is largely second growth, and less valuable, but should be maintained and improved on the steeper slopes, where erosion acts with great rapidity if the forest is removed. Perhaps less than 10 per cent of the county can be regarded as absolute forest land.

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TABLE No. 26.

Showing the number of years that the timber supply will last in the counties and districts, assuming various rates of growth.

COUNTY. OR DISTRICT	Area forested acres	Total stand, M. bd. ft.	Total output, M. bd. ft.	RATE OF GROWTH PER ACRE.				
				0. bd. ft. years.	50 bd. ft., years	100 bd. ft., years	150 bd. ft., years	200 bd. ft., years
Livingston	93,895	133,274	10,864	12	26	90	a	.....
Crittenden	50,680	50,152	19,484	3	.....	4	.....	5
Caldwell	71,377	129,159	5,655	23	62	a	.....	.....
Lyon	88,431	162,579	12,354	13	20	46	a	.....
Trigg	191,600	489,766	26,378	19	28	69	a	.....
Christian	117,207	178,520	14,803	12	20	58	a	.....
Todd	62,406	99,293	11,699	8	12	18	42	a
Muhlenberg	110,602	204,460	35,791	6	7	8	11	15
Hopkins	147,093	185,750	22,870	8	12	23	230	a
McLean	74,054	196,894	61,685	3	.....	4	.....	5
Webster	35,269	37,782	14,651	2	.....	3	4	5
Union	12,454	14,889	4,587	3	4	5	6	7
Henderson	36,834	55,639	10,671	5	6	8	11	17
Daviess	113,723	220,593	13,063	17	30	130	a	.....
TRADEWATER	1,205,625	2,158,750	264,555	8	11	15	26	92
Harlan	266,212	1,915,118	24,765	77	162	a	.....	.....
Bell	184,811	1,037,824	18,548	56	111	a	.....	.....
Knox	133,413	370,700	21,222	17	25	47	306	.....
Laurel	159,478	337,011	34,962	10	12	18	30	103
Jackson	155,347	709,485	23,181	31	46	93	a	.....
Rockcastle	130,371	246,425	16,231	15	25	77	a	.....

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TABLE No. 26—Continued.

COUNTY. OR DISTRICT	Area forested acres	Total stand, M., bd., ft.	Total output, M., bd. ft	RATE OF GROWTH PER ACRE.				
				O. bd. ft., years	50 bd. ft., years.	100 bd. ft., years	150 bd. ft., years	200 bd. ft., years
Pulaski	285,062	272,574	38,791	7	11	26	a	
Whitley	215,822	486,703	63,841	8	9	12	15	24
Wayne	281,883	836,691	12,431	23	67	a		
CUMBERLAND RIVER	1,812,399	6,212,531	253,972	24	38	86	a	
Greenup	115,680	149,974	27,000	6	7	9	15	39
Boyd	44,979	70,864	10,138	7	9	13	21	62
Carter	154,887	165,722	17,264	10	17	93	a	
Elliott	55,000	110,000	15,340	7	9	11	16	25
Lawrence	98,601	186,067	32,373	6	7	8	11	15
Johnson	67,706	138,205	18,584	7	9	12	16	27
Martin	97,861	365,987	24,188	15	19	25	38	79
Floyd	165,305	610,840	16,556	37	74	a		
Pike	437,880	2,004,601	38,576	52	120	a		
Knott	186,659	907,670	5,370	169	a			
Letcher	177,511	1,441,712	12,850	-112	365	a		
BIG SANDY RIVER	1,602,069	6,151,642	218,239	28	45	106	a	
Clay	175,690	675,825	22,672	30	49	132	a	
Leslie	218,092	1,123,919	31,828	35	52	112	a	
Perry	171,484	858,916	22,900	37	60	150	a	
Breathitt	245,848	876,298	49,379	18	24	35	70	a
Owsley	78,915	317,568	14,071	22	31	51	141	a
Lee	91,287	175,765	40,009	4	5	6	7	8
Wolfe	88,794	228,843	28,190	8	10	12	15	20

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TABLE No. 26—Continued.

COUNTY OR DISTRICT.	Area forested acres	Total stand, M. bd. ft.	Total output, M. bd. ft.	RATE OF GROWTH PER ACRE.				
				0. bd. ft., years	50 bd. ft., years	100 bd. ft., years	150 bd. ft., years	200 bd. ft., years
Estill	90,894	128,528	29,462	4	5	6	8	11
Powell	64,031	107,077	15,336	7	9	12	19	42
KENTUCKY RIVER	1,225,035	4,492,739	253,847	18	23	34	64	508
Magoffin	93,091	355,887	19,763	18	23	34	61	310
Morgan	115,588	309,695	44,838	7	8	9	11	14
Menifee	84,884	225,462	21,304	11	14	18	26	52
Rowan	112,406	199,771	36,490	5	6	8	10	14
Lewis	180,856	205,842	32,930	6	9	14	35	a
UPPER LICKING	586,825	1,296,657	155,325	8	10	12	19	34
Montgomery	36,315	38,987	2,007	19	203	a	.....	.....
Bath	69,089	76,499	4,409	17	80	a	.....	.....
Fleming	29,830	37,067	7,552	5	6	8	12	23
Mason	1,991	4,473	1,360	3	.....	4	.....	5
Nicholas	3,279	8,141	2,040	4	.....	5	.....	6
Robertson	2,180	5,156	963	5	6	7	8	10
Bracken	2,401	6,493	1,986	3	.....	4	.....	5
Harrison	9,889	16,380	1,845	9	12	19	45	a
Pendleton	3,208	6,430	1,220	5	6	7	9	11
Campbell	1,752	4,241	610	7	8	10	12	16
Kenton	2,052	3,655	1,422	2	.....	3	.....	4
LOWER LICKING	161,986	207,522	25,414	8	12	23	186	a

a In this case the timber supply would last indefinitely, since the annual growth exceeds the present output.

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THE APPROACHING EXHAUSTION OF THE TIMBER SUPPLY.

The increasing scarcity of timber throughout the country has led to much inquiry as to how soon the supply will be exhausted. This question naturally arises with reference to Kentucky, and is answered in Table 26 as well as the available data permits. In order to understand how far these figures can be relied upon, as actual predictions of how long the timber supply will last in the various counties and districts, the three factors entering into such a prediction will be discussed briefly. These facts are (1) the total stand of timber, (2) the average annual consumption, and (3) the average annual growth.

(1) The total amount of standing timber in the county or district in question is the first factor to be considered. This has been determined as accurately as time and funds will premit, by dividing each county into convenient areas, usually small watersheds. On each of these divisions, the area of land in forest and the average stand per acre of forest land was estimated. From these estimates the total stand by counties and districts was computed.

(2) The second factor affecting the length of time that the timber will last is annual consumption. Within a specified territory this consists of three elements; first, the market output; second, the local consumption; and third, the loss from fire, decay and wasteful utilization. The first is the only element of the three than can be measured over wide areas. In making this study, the output of timber put on the market in the various counties was obtained for one year only. Many circumstances cause considerable fluctuations in the output of the county. The advent of a railroad into the new territory always causes an enormous jump in consumption out of proportion both to the former output and to that which will be maintained after a few years have passed. In some of the western counties a large amount of second-growth timber is just too small for general exploitation. The output is therefore small relative to the total stand, but it may be expected to rise rapidly in a few years. The season of 1907-8, for which the figures were obtained in five out of the six districts, was a year of general industrial depression in which the timber produc-

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tion in many of the counties was materially reduced. These facts indicate that the figures obtained for the annual market output are lower than the average. Considering that they also neglect the elements of local consumption and waste, it is apparent that these output figures constitute a very conservative basis for predicting how soon the exhaustion of the timber supply may be expected.

(3) The third factor entering into these predictions is annual growth. Although this factor is of great importance, it is very difficult to measure over large areas, especially where so many important species, each with a different rate of growth, are concerned, as is the case in Kentucky. Since it was not deemed advisable to undertake a task of such magnitude in connection with this study, no figures for the average annual growth per acre in the different counties are available. Therefore it has been necessary to assume certain arbitrary rates of growth. With these as a basis, tables have been constructed showing how long the timber supply would last. In general, the average annual growth over the State is probably 50 and 100 board feet per acre. The highest rate obtained by actual measurements is about 200 board feet on coaled-over land, where vigorous even-aged sprout stand has come up. An annual growth of even more than 200 feet per acre could be obtained by applying the principles of forestry. A forest under proper management would become well stocked with thrifty, rapid growing trees of many different ages. Cuttings would be made at more or less regular intervals to remove the trees as they become mature, thus avoiding loss through stagnation and decay. Reproduction would be protected from fire and grazing, and would consist largely of the most valuable species, since the loggers would leave seed trees of these species only. Actual conditions, on the other hand, are not favorable to rapid growth, since as a rule lumbering has been unrestricted and reproduction neglected. Throughout the State it is probable that the growth is very nearly offset by the loss through fire, decay and wasteful utilization. In this case, the first column of the table, where it is assumed that there is no net annual growth, probably gives the fairest estimate of how long the timber supply will last.

The figures in the table can not, however, be taken as giving an accurate prediction of how soon the timber will

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be exhausted in any particular county. The data is not complete enough for this purpose. Nevertheless, the table is valuable in that it gives some indication as to what may be expected if the present output is maintained, especially when a group of counties or a district is considered as a whole. The chief use of the table, however, is to show the importance of increasing the rate of growth of the forests by proper management. The greater the area of the forest land relative to the output, the more noticeable is the effect of increasing the growth per acre in the county. For example the table shows that the present annual output would probably exhaust the forests of Pulaski county in 11 years, with a growth of 50 board feet per acre, while a growth of 150 board feet would be more than sufficient to supply the present demand perpetually. The Tradewater forests would probably last only 11 years, with 50 feet annual growth, and 92 years with an annual growth of 200 feet. On woodland under proper forest management, the growth can be gradually increased to well above 200 feet per acre, and the more general the practice of forestry becomes, the greater will be the increase in the average annual growth over the State. A study of the table shows the great effect of increasing this average even by a small amount per acre.

If all the six districts studied, which comprise practically one-half of the area of the State, and includes the best timbered sections, are considered together, the standing timber would supply the present demand for only 18 years, assuming that the growth is offset by local consumption and waste, or that there is no net annual growth. If the net annual growth per acre were 100 board feet, the supply would last 40 years. If a group of eight counties,* located on the headwaters of the Cumberland, Big Sandy and Kentucky rivers, where the output is abnormally low because of the present lack of transportation facilities, is excluded from these six districts, the figures for the remainder show that the standing timber will be gone in 11 years, if there is no net annual growth, or in 20 years if the net annual growth is 100 board feet per acre. If this growth could be increased to 200 board feet, the supply would last 250 years. Excluding these eight abnormal counties, the figures more closely represent the forest conditions of the entire State than those for the six districts

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complete, and emphasize the necessity of increasing the productive power of the Kentucky forests by conservative forest management.

STATE FORESTS FOR KENTUCKY.

Why Needed.

One of the chief purposes of State forest reserves should be the educating of the public in forestry. Such education is accomplished best by object lessons. Forest reserves, properly managed and wisely distributed in the different regions of the State, would show the citizens just what forestry is, how it can be applied, and what it can accomplish. Undoubtedly the majority of private owners will manage their forest lands conservatively if convinced by an actual example of the practicability of doing so. Until the forests of Kentucky are so managed they will continue to suffer through reckless cutting, damage from fire, etc., and the loss will fall heavily in the future on the important industries of the State that depend on the forests for their maintenance. The educational value of State forests, in showing the public how to get the greatest returns from forest land, can not be overestimated.

A second object of State forest reserves is the experimental determination of methods in forest management which are most applicable to conditions found in Kentucky. So little has been done in the line of forestry in this State that a great many details in the management of forest lands must be worked out. The importance of conserving the forests is so great that the State is justified in doing pioneer work along this line, and solving by experimental methods various problems in planting, cutting and other forestry operations. For example, it is very probable that certain species not indigenous to the western part of the State, such as white pine, might be very profitably grown there on certain classes of soil, and yet it is impossible to advise private owners to plant these trees without any definite knowledge as to what results can be expected. A small experimental plantation on a State forest would soon settle such questions, and might be the means of introducing some very valuable trees for planting purposes.

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State-owned forests would be of particular value in the mountain districts of Kentucky, especially on the upper waters of the more important rivers. Here it is very desirable that a good forest cover be maintained on the steeper slopes, in order to regulate the flow of streams that supply the larger rivers of the State. By retarding evaporation and checking the surface run-off, the forest tends to prevent floods and to distribute the water supply more equally through the seasons. Destructive flood followed by seasons of low water are the usual results of removing the forest cover from the headwaters of a drainage system. The State forests can be so handled as to yield timber without destroying their protective value. Moreover, although they can cover only a small proportion of the watershed, they will accomplish large results through the private owners, who will follow the example of the State after the advantages of conservative management have been demonstrated.

The scenic value of mountain forests must also be considered, as it is probable that a summer resort business may be developed in various parts of the mountains, which will be a source of considerable profit. The chief attraction of mountain scenery is the forest, and it must be maintained wherever it is hoped that a popular place of recreation may be established. By leasing hotel sites on State forests, the State could enjoy a direct revenue from the development of a summer resort industry, as well as the general benefit of the industry to the public.

In addition to the benefits of State forest reserves above mentioned, the revenue that may be obtained from the sale of timber should eventually yield a substantial profit over the expenses of administration. With conservative methods of cutting, permanent income could be secured, which would increase as the productivity of the forest is improved by proper management, and as the price of forest products rises. Thus, although the forest reserves are so much needed for educational and experimental purposes that a considerable outlay for their purchase and maintenance would be warranted, they can in time be made not only self-supporting, but even a substantial source of revenue, and constitute the best sort of a long-time investment for the State.

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PRECENDENTS.

State forests in this country are not without precedent, for nine States have acquired or set aside land for the purpose, aggregating in area nearly three million acres. These States and the total acreage of their forest reserves up to the end of 1907, are as follows:

New York	1,548,450
Pennsylvania	761,000
Wisconsin	300,000
Minnesota	42,800
Michigan	39,000
New Jersey	9,867
Indiana	2.000
Maryland	1,957
Connecticut	1,400

Since 1907, many of these States have increased their holdings, and very recently Massachusetts has followed their example by inaugurating the policy of acquiring forest reserves.

New York, starting with a nucleus of about 300,000 acres of State land, has increased her forest reserves by purchasing large areas in the Adirondack and Catskill mountains. A great deal of land, from which the valuable spruce timber has been cut, has been acquired, and is being protected and improved by the State.

In Pennsylvania the Legislature as early as 1897, authorized the creation of forest reserves through the purchase of land at tax sales. Two years later, the limitation as to tax lands was abolished and any land needed could be acquired. The price to be paid has been limited to $5 per acre, or in case of tax lands, to the taxes and costs of the sale, and not more than $300,000 can be expended for this purpose in any one year. The extensive forests acquired under these provisions are located in twenty-three of the wilder mountain counties, and cost an average of $2.25 per acre. Altogether, $3,500,000 have been appropriated by Pennsylvania for forestry purposes.

Wisconsin set aside in 1905, all State lands in the timbered part of the State (north of Township 33), amounting to 254,000 acres. Any agricultural land included in this can be sold and the proceeds used in buying forest lands. These reserves are being consolidated, one on the head of

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the Wisconsin and Chippewa rivers, and the other two on the St. Croix and Brule rivers, respectively.

Minnesota has both State and National forest reserves, each fulfilling its purpose. The Itasca State Park, on the headwaters of the Mississippi, has been placed under charge of the forestry board, and $2,000 a year has been appropriated for demonstration work there, in addition to $1,500 for fire-breaks, development and improvement. This work is of great educational as well as practical value.

Michigan has reserved State lands in three townships for a State forest, and the forestry commission can purchase land within the limits of the reserve in order to consolidate the holdings.

New Jersey in 1905, began the policy of acquiring land for forest reserves by purchase, paying on the average a little less than $5 per acre. The Governor states that they will soon begin to return a revenue to the State, and will eventually show a handsome profit on the investment.

In Indiana it has been possible to conduct instructive experimental work in planting on the State forest of 2,000 acres.

The forest reserve system of Maryland was first made possible through the gift of a tract of land to the State for this purpose. In 1906 the purchase of land was authorized, and the price to be paid limited to $5 per acre. All receipts from the reserves are to be used in their improvement and extension.

Connecticut's small forest reserve has proved of great educational value, and it is hoped that small tracts will be secured in every county for demonstration purposes.

That State forestry pays financially in the long run is shown by the experience of foreign countries. In the United States we cannot expect to get a profit at the start, since lands such as the State could acquire for $5 per acre or less would be largely depleted of valuable timber. But where forestry has been practiced for some time, as in many foreign countries, the profits are considerable. The State forests of Germany are the best examples of what forestry can accomplish, when applied through a long period of time. The following table, taken from Forest Service Circular 140, shows how profitable these forests are to the states that own and manage them:

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State	Total Net Annual Revenue from State Forests	Net Annual Revenue Per acre
Wurtemburg	$ 3,098,428.00	$6.60
Saxony	2,299,000.00	5.30
Baden	329,162.00	4.42
Hesse	744,209.00	4.29
Prussia	17,054,144.00	2.50
Bavaria	5,128,348.00	2.22

Their Establishment.

The only land now in possession of the State of Kentucky is the fair grounds at Louisville. About four or five acres of this, which has not been required for the State fairs, could be used as a forest experiment station, where a small nursery could be started and planting experiments carried on. It could be of considerable interest to the visitors at the fairs, and would afford a means of beautifying the grounds.

The most important forestry work of the State, however, should be done on land which is more profitable for forest than for agricultural purposes. State forest reserves on land of this class should be located on the upper waters of the principal rivers. But they should not be too inaccessible, as in that case only a small number of people would come in contact with them, and their educational value would be diminished. The price to be paid for land should be limited to $5 per acre: to discourage attempts to defraud the State and to insure against the acquisition of agricultural land. Gifts of land should be accepted if, unconditional, or if mineral rights alone are reserved. The aim should be to establish four State forests of from one to ten thousand acres each, which may be extended in time as conditions warrant. These should be located on the waters of four most important streams, the Big Sandy, Cumberland, Kentucky and Green rivers. Where it is necessary to include valuable coal lands in the reserve, the State could buy the surface rights alone, allowing the original owner to retain the mineral rights. The timber for carrying on mining operations could be brought from the State when required.

It must not be thought that the proposed Appalachian National Forest, if established, would take the place of State forests. Because of the difference both in location and in the purpose of management, the functions of the two would not conflict. As at present planned, the National Forest would

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touch but a small strip on the extreme southeastern part of the State, and would be managed primarily for the conservation of interstate water and timber supplies. The Kentucky reserves, on the other hand, would be so distributed as to be of greatest educational value to the people of the State, and would be managed primarily with the object of solving problems peculiar to Kentucky. As in Minnesota, both State and National Forests could exist in the same State with the greatest possible benefit to all.

Recommendations.

In order that the knowledge of forest conditions gained by this study and set forth in this report may attain wide usefulness and bring forth definite results, the State should lose no time in appointing a State Forester. It has been shown that Kentucky has a large area of forest land which is becoming unproductive through fire and mismanagement of the timber crop. While this and other reports may call attention to these facts and suggest improvements in forest management, the situation requires the active personal attention of a State expert if conditions are to be promptly remedied. Agricultural experts are hired by the State in order that the productivity of cultivated land may be increased. Similarly, a thoroughly competent forester should be employed in order that the highest permanent income from lorest land may be secured. A State Forester should have had a thorough technical education in a good American forest school. Thorough training in his line is just as necessary for a State Forester as for a city engineer or a corporation lawyer. A State Forester should also have had experience in the practice of his profession, and be a man of tact and administrative ability. Such a man should command a salary of $2,500 per annum and necessary expenses in the performance of his duties. The State of California pays its forester $3,000, besides giving him two technically trained assistants. The State Forester of Wisconsin, whose technical training must be certified by the U. S. Secretary of Agriculture, is paid $2,500 and expenses. Even the small State of Vermont has provided for the same salary for its forester. The responsibility of carrying out the forest policy of a large State like Kentucky is such that a man of the highest qualifications should be secured, and it is not probable that the ser-

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vices of such a man could be obtained for less than the salary recommended.

That the work of the State Forester may be most effective and the best results obtained in carrying out a forest policy for the State, there should be a special board of forestry. The present very efficient Board of Agriculture, Forestry and Immigration, which has been given charge of and has done much to forward the forestry work of the State can not now give the time and attention that this most important subject deserves. Even with the forestry movement in its infancy the Board has been very much overworked, so that to get adequate recognition this work must be handled by a special board of forestry.

One great advantage of the proposed board* is its absolute freedom from political influence. With two members filling the highest elective offices in the State, two holding the highest scientific positions in the gift of the Commonwealth, one a leader in scientific education, and the sixth appointed by the Governor on account of his interest in and knowledge of forestry, a most competent and impartial body will be secured and one that should be able to establish and carry out an adequate forest policy to the best possible advantage of the State. Dr. Rothrock, who may be said to be the father of forestry in Pennsylvania, declares that the success of the forest policy in that State is due to the fact that the department of forestry is on the same level with the other State departments, and that the head of the department is a member of the Governor's cabinet.

A forest policy can not permanently succeed in a State without the intelligent and interested support of its citizens. The benefits to be derived from the practice of forestry are at present little understood by the great mass of the people, and it will be one of the principal duties of the State Forester to interest and instruct the people in this important work. To do this he must carry on a campaign of education through the State by the publication of instructive and readable bulletins, by carrying on a course of lectures at the farmers' institute and other meetings, and by the encouragement of elementary instruction in forestry and related subjects in the public schools of the State.

In order to demonstrate and enforce the practical aspects of forest management, actual operations should be

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conducted on sample areas of forest land throughout the State, both on land purchased by or given to the Commonwealth and controlled by them, and on privately owned tracts.

The examination of woodlots and timber tracts, at the request of the owner, for the purpose of recommending improved schemes of management, will be an important part of the State Forester's work. The Federal Forest Service now co-operates with individuals and corporations in the various States who ask their assistance, but it is the policy of the Service to turn this work gradually over to the State as soon as there is a State organization competent to take charge of it.

There is ample opportunity for developing co-operative forestry in Kentucky. The importance of the rivers of the State for water power and navigation makes it essential that the forest lands on their upper watersheds which are unfit for agriculture shall be kept in the best possible condition to regulate the flow of the streams. The large amount of absolute forest land now held by coal and development companies, on the headwaters of the principal rivers of the State, should be managed conservatively with this end in view. This can only be done by the coal and development companies and the private individuals who now control a great part of the land. The active co-operation of the State is most desirable. This would take the form of examinations and subsequent inspections of the properties by the State Forester. It would mean improving the producing capacity of the forests by the regulation of logging and the introduction of other measures which would be carried out by the owners. It should also result in the prevention of forest fires which destroy so much of the absorbent properties of the forest cover.

Forest fires in Kentucky, though not as destructive as in some States, do incalculable damage by the destruction of the leaf cover of the soil and of reproduction, and by injury to standing timber. It is as much the duty of the State to protect a man's timber crop from fire as to protect his store from burglars. The expenses of fire protection should be borne in part by the State and in part by the county or township in which the protected property is located. To insure the greatest efficiency, the State Forester should be

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chief fire warden and should have control of the fire-fighting force of the State. He should not only advise the county wardens, but in times of special emergency, where fires are beyond the control of the county warden, he should repair to the scene of action and take such steps as he deems necessary to extinguish the fire and prevent its recurrence. His salary and expenses should be paid by the State.

In those counties where the pepetuation of the forest is of prime importance and the damage from forest fire is most serious, or where a proportion of the taxpayers ask such aid, a county fire-warden should be appointed. To prevent domination of this position by politics and to insure the selection of the most competent man, the appointment should be subject to the approval of the State Forester, who should also have the power to dismiss him for cause. This man should be selected not as a reward for political services or as a member of the party in power, but solely with the view to his fitness for the position. He should be a straightforward strong and energetic man, should know the road and trails of the county, and should be familiar with woodcraft. Such a man may he hard to secure for the small compensation which he would receive, especially since he would not be employed continuously. In some instances, where large landowners are vitally interested, it is quite possible that some co-operative agreement could be arranged whereby a man could be continuously employed, the various interested landowners co-operating with the county and State in the payment of his salary. This firewarden system could be started in a few of the counties needing fire protection the most, and then gradually extended to other counties as the benefit became apparent.

Kentucky has had a law* against setting fire to the woods upon her statute books for several years, but because of its indefiniteness and the lack of adequate machinery for its enforcement, it has been practically inoperative. The law** requiring railway companies to use spark arresters is good as far as it goes, but it should be made to apply to owners of all classes of engines operated in or near forest or grass land. The section* requiring railway companies to keep their rights of way clear of combustible material is adequate and should be enforced.

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Unfortunately there seems to have been little attempt to enforce these laws. Public opinion has been indifferent, and no one seems to have thought it his duty to indict or prosecute offenders. Under the proposed organization it will be different. It will be the county firewarden's duty to procure evidence, to prosecute and try to convict all those guilty of infractions of the forest and fire laws. He will be firmly backed up by the State Forester and the Board of Forestry. Even then the law cannot attain its greatest usefulness unless the best citizens are in sympathy with its aims and are ready to support the wardens in enforcing it.

The following forest law, drafted to suit as nearly as possible local conditions in Kentucky, embodies what seems from the study so far made to be the essential points in such legislation. A further study of the forest conditions of the State may suggest some slight additions or modifications, but if this law could be enacted at the next session of the legislature and its provisions carried out, Kentucky would have no cause to feel that she was behind the foremost States in the protection and encouragement of her forest wealth.

A PROPOSED FOREST LAW.

AN ACT to Create a State Board of Forestry, to Promote Forest Interest in the State and to Appropriate Money Therefor.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

SECTION 1.—That there shall be a State Board of Forestry consisting of six members, the Governor, President of the State Agricultural and Mechanical College, Commissioner of Agriculture, Labor and Statistics, Director of the State Agricultural Experiment Station, State Geologist and one prominent timberland owner of the State known to be interested in the advancement of forestry, who shall be appointed by the Governor, to serve for a period of five years. This board shall meet at least twice each year at the State Capitol and at such other times and places as the Governor may designate. They shall receive no compensation, except the necessary expenses incurred in attending the meetings of the board.

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SECTION 2.—That there shall be appointed by the State Board of Forestry a State Forester, who shall have a practical knowledge of forestry, and who shall be a trained forester. His technical knowledge shall be certified by the Secretary of the U. S. Department of Agriculture. His compensation shall be fixed by the board and shall not be less than $2,500 per annum, and he shall receive, besides, reasonable traveling and field expenses incurred in the performance of his official duties. He shall be provided with a suitable office in the State Capitol; be entitled to receive from the Superintendent of Public Property such stationery, postage and other office supplies and equipment as may be necessary; and be furnished by the State all necessary printed forms and notices, and the publications hereinafter provided. He shall act as Secretary of the State Board of Forestry. He shall, under the snpervision of the State Board of Forestry, have direction of all forest interests in the jurisdiction of the State, direct the management of the State forest reserves, collect data relative to forest conditions in the State, and take such other action as is required by law to prevent and extinguish forest fires. He shall have charge of all county firewardens in the State, and shall aid and direct them in their work, co-operate in forest work as provided in Section 4, and carry on a course of lectures in forestry and related subjects at the Farmers' Institute and similar meetings within the State. He shall prepare annually a report to the State Board of Forestry on the progress and condition of State forest work, and recommend therein plans for improving the State system of forest protection, management and replacement.

SECTION 3.—That the State Board of Forestry shall have the power to purchase lands in the name of the State suitable for forest culture and reserves, at a price which shall not exceed five dollars per acre, using for such purposes any surplus money not otherwise appropriated, which may be standing to the credit of the State Board of Forestry, and to make all rules and regulations for the administration of such lands as State forest reserves; and that the Governor is authorized, upon the recommendation of said State Board of Forestry, to accept gifts of land to the State, the same to be likewise held, protected and administered under rules and regulations of the State Board of Forestry.

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as State forest reserves, and to be used so as to demonstrate the practical utility of timber culture. Such gifts must be absolute except for the reservation of all mineral and mining rights over and under said lands, and a stipulation that they shall be administered as State forest reserves, and the Attorney-General of the State is directed to see that all deeds to the State of lands mentioned are properly executed, and that the title to such lands is free of encumbrances, before the gift is accepted.

SECTION 4.—That the State Forester shall, acting under the supervision of the State Board of Forestry, when he deems it necessary to the best interest of the people and the State, co-operate in forest surveys, forest studies and forest protection, and in the preparation of plans for the protection, management, replacement of trees, woodlots and timber tracts, with any of the several departments of the Federal or State government, and with counties, towns, corporations and individuals, under an agreement that the parties obtaining such assistance pay at least the salary or field expenses of the men employed in preparing said plans.

SECTION 5.—That whenever the State Forester considers it necessary he may apply to the Board of Supervisors of any county to appoint, subject to his approval, a suitable resident of said county to be county firewarden to enforce the forest laws and to carry out all the purposes of this act. He shall serve for a period of two years and may be reappointed, but he shall be subject to removal at any time by the State Forester for cause. Such county firewardens and those assisting them shall on the endorsement of the State Forester receive compensation from the State for their services in carrying out the provisions of this section at the rate of not to exceed twenty-five cents per hour for the time actually employed provided that the total of such accounts shall not exceed $200 for each county in any one year; and the State Treasurer is hereby authorized to collect one-half curred. County firewardens thus appointed shall, before encurred. County firewardens thus appointed shall, before entering upon the duties of their office, take the proper official oath before the county clerk of the county in which they reside; after which they shall, while holding said office, possess and exercise all the authority and power held and exercised by constables at common law under the statutes of this Com-

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monwealth, so far as concerns the arresting and prosecuting of persons for violations of any or all of the provisions of this law.

SECTION 6.—That it shall be the duty of the county firewardens to enforce all forest laws of this Commonwealth; to protect the State forest reserves, and see that all rules and regulations in connection therewith are enforced; to report any violation of law to the State Forester at the time of its occurrence; to assist in apprehending and convicting offenders, and to make an annual report to him as to forest conditions in their immediate neighborhood. When any county firewarden shall see or have reported to him a forest fire, it shall be his duty to immediately repair to the scene of the fire and employ such persons and means as in his judgment seem expedient and necessary to extinguish said fire. He shall keep an itemized account of all expenses thus incurred and send such account immediately to the State Forester.

SECTION 7.—That any county firewarden who shall refuse to carry out the provisions of the preceding section, or any able-bodied citizen who shall refuse to render assistance as provided by said section, shall be punished by a fine of not less than ten nor more than fifty dollars, or by imprisonment in the county jail for not less than ten days nor more than thirty days, or by both such fine and imprisonment.

SECTION 8.—That the expenses, other than for wages as provided in section 5, incurred in fighting or extinguishing any fire under the direction of the State Forester or a county firewarden shall be borne by the county in which the fire occurred, and shall be payable in full by the county supervisors of such county upon the receipt of an itemized account with vouchers approved by the State Forester.

SECTION 9.—That the Board of County Supervisors of the various counties of this Commonwealth are hereby authorized to levy and appropriate money for purposes of forest protection, improvement and management; and said Board shall have recourse under an action at law debt against any landowner, individual or corporation on whose account they shall have been obliged to pay out money for fighting fire for the amount which they shall have expended for such purpose.

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SECTION 10.—That the State Forester shall furnish notices, printed in large letters upon cloth and strong paper, calling attention to the dangers of forest fires and to forest fire laws and their penalties; such notices shall be distributed by the State forester to county firewardens and posted by them in conspicuous places upon state forest reserves, along the highways in forest-covered country, and in other public places.

SECTION 11.—That any person who shall maliciously or wilfully destroy, deface, remove or disfigure any sign, poster or warning notice posted under the provisions of this act shall be guilty of a misdemeanor and punishable upon conviction by a fine of not less than fifteen dollars nor more than one hundred dollars, or by imprisonment in the county jail for a period of not less than ten days nor more than three months, or by both such fine and imprisonment.

SECTION 12.—That every individual or corporation that carelessly, negligently or wilfully, maliciously or with intent, sets on fire, or causes or procures to be set on fire, any woods, brush, grass, grain or stubble, on lands not owned by such individual or corporation, shall be guilty of a misdemeanor, and upon conviction be punishable by a fine of not less than twenty-five dollars nor more than one thousand dollars, or imprisonment for not less than thirty days nor more than one year, or both such fine and imprisonment; except that camp fires sufficient to warm the person and to cook food may be built on unenclosed and unposted land, provided proper precautions are taken to prevent the spread of such fire and provided it be totally extinguished before leaving such camp. *Provided,* that nothing herein contained shall apply to any person who in good faith shall set a back fire to prevent the extension of a fire already burning.

SECTION 13.—That it shall be unlawful for any person or corporation owning land to set or procure another to set fire to any woods, brush, logs, leaves, grass or clearing upon such land, unless all possible care and precaution against the spread of such fire to other land shall have been taken by previously having cut and piled such brush, logs, leaves or grass, or having carefully cleared around the land which is to be burned, so as to prevent the spread of such fire. The setting of fire contrary to the provisions of this section, or allowing it to escape to the injury of adjoining lands, shall

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be *prima facie* proof of wilfulness or neglect, and the land-owner from whose land the fire originated shall be liable in a civil action for damages for the injury resulting from such fire and also for the cost of fighting and extinguishing the same.

SECTION 14.—That whenever the State Forester or any firewarden of any county becomes convinced that a dangerously dry time exists, and that it is imprudent to set fire on any land, the fire-warden shall post or caused to be posted, a notice in three public places in his county forbidding the setting of any such fire therein, and after the posting of such notices no person shall set any fire upon any land in said county, except for warming the person or cooking food, until written permission has been received from the fire-warden of said county. All persons who start camp fires shall exercise all reasonable precaution to prevent damage therefrom, and shall extinguish the same before leaving them. Every person violating any provision of this section shall be punished by a fine of not more than fifty dollars, or by imprisonment in the county jail for not more than six months for each offense.

SECTION 15.—That logging and railroad locomotives, donkey or threshing engines and other engines and boilers operated in, through or near forest or brush, which do not burn oil as fuel, shall be provided with appliances to prevent the escape of fire and sparks from the smoke stacks thereof, and with devices to prevent the escape of fire from ash pans and fire boxes. Every railway company shall keep its right of way clear and free from weeds, high grass and decayed timber, from their nature and condition, are combustible material, liable to take and communicate fire from passing trains to abutting or adjacent property. No railroad company shall permit its employees to deposit fire, live coals or ashes upon their tracks, outside of the yard limits, unless they are immediately extinguished. Engineers, conductors or trainmen who discover that fences or other material along the right of way or lands adjacent to the right of way are burning or in danger from fire shall report the same to the agent or person in charge at their next stopping place at which there shall be a telegraph station. Railroad companies shall give particular instruction to their section employees for the prevention and prompt extinguishment of fires, shall

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cause notices, which shall be furnished by the State fire-warden, to be posted at their stations, and, when a fire occurs along the line of their road or on lands adjacent thereto, for which fire they are responsible, shall concentrate such help and adopt such measures, as shall most effectually arrest its progress. Failure to comply with these requirements shall be a misdemeanor, punishable, upon conviction, by a fine of not less than ten dollars nor more than one hundred dollars for each and every offense thus committed.

SECTION 16.—That all individuals or corporations causing fires by violations of Sections 12, 13, 14 and 15, of this act shall be liable to the Commonwealth and to the county in which the fire occurred, in an action for debt to the full amount of all expenses incurred by the Commonwealth or county in fighting and extinguishing such fire.

SECTION 17.—That justices of the peace for this Commonwealth in the county wherein the offense shall have been committed shall have jurisdiction to hear and determine all prosecutions for the purpose of enforcing fines and penalties, collectible under the provisions of this act, not exceeding the amount of one hundred dollars and of holding the offender, under proper bail if necessary, for hearing before the circuit court, committing them to the county jail until such hearing, if required bail is not furnished. It shall be the duty of the Commonwealth's attorneys of the several counties to prosecute all violators of Sections 12, 13, 14 and 15 of this act.

SECTION 18.—That all money received as penalties for violations of the provisions of this act shall be paid into the county treasury, and all moneys received from the sale of wood, timber, minerals or other products from the State forests, or recovered in civil suit as damages to the State forests as hereinbefore provided, shall be paid into the State treasury and shall constitute a forest reserve fund which shall be disbursed only for the purchase of lands to be added to the State forest reserves, and for the improvement and protection of said reserves, by or upon the order of the State Forester, with approval of the State Board of Forestry.

SECTION 19.—That there is hereby appropriated the sum of ten thousand dollars ($10,000) annually for the payment of salaries and expenses other than those provided for

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in Section 5 and for the purchase of land as herein provided for.

SECTION 20.—That expenses incurred under Section 5 shall be paid by the State out of the general fund, provided that not more than ten thousand dollars ($10,000) be expended for this purpose in any one year.

SECTION 21.—That all acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

SECTION 22.—That this act shall take effect from the date of its passage.

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APPENDIX I.

FORESTRY FOR COAL MINE OWNERS.

Distribution of the Industry.

Kentucky is the eighth State in order of importance in the coal-mining industry and contains within its borders parts of two of the great coal fields of the country.

The southern portion of the central or eastern interior field extends into eleven counties along the northern border of the western part of the State and underlies an area of 5,800 square miles. The western district, lying as it does in a country easily accessible to railroad and water transportation, produces over three-fifths of the coal mined in the entire State. Of this amount, Muhlenberg and Hopkins counties together turn out from their forty mines more coal than the other nine counties of the region. Ohio, Henderson, Union and Webster make up nearly all of the remainder.

Almost the entire eastern or mountain part of the State is underlaid by the western border of the Appalachian coal field, which has an area in Kentucky of something like 11,000 square miles. Owing to the rough nature of the country and the entire absence of railroad or water transportation in seven of the mountain counties, mining operations have been restricted to the northeastern and southeastern counties, leaving a rich, undeveloped country between, waiting for the advent of the railroads. This divides the region into two mining districts, but as forest as well as mining conditions are much the same in both of them, for the present purpose the eastern coal field is treated as a unit. At present the largest part of the output is from the southern part of the region. Bell County producing ever one-fourth of the total from this field, Whitley, Knox and Pike coming next. These four counties produce over three-fourths of the coal mined in the eastern region, although commercial mines are worked in fifteen counties.

The total ouput of coal from the State has been increasing rapidly year by year and as the railroads penetrate

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the rougher counties, a great increase in mines and a corresponding development of the country is sure to take place. To keep pace with this development and at the same time to insure a necessary supply of timber for the future, care will have to be exercised in the handling of those timberlands which are owned by the mining companies or from which they expect to draw their supply.

Consumption of Timber.

Timber used in the mining of coal is of two classes; split or round, and sawed. Props, caps, room ties and collars are usually split, while rails, brattice, entry ties and trestle timbers are commonly sawed, although practices vary according to the needs of the mine or the quality of the supply. Owing to the smallness of the timber in the west, props are often round, while in the east, where workable timber is more plentiful, they are generally split. They average from four to five inches square at the small end and are as long as the thickness of the coal bed which is being worked. They are put in the rooms by the miners to support the roof where the coal is taken out. The number of props which is required varies according to the quality of the rock covering which forms the roof of the coal seam. In the western field the chief seam mined has a roof of limestone and requires practically no props, the "pillars" of coal on each side of the rooms furnishing sufficient support. But where the roof is slate or shale as it usually is in the east and in some mines in the west, props are put in at varying distances, averaging about one prop to every 20 feet of floor space, although often closer if the roof is bad. These props comprise over half of the timber that is put into the mines.

Caps are small pieces, about an inch thick, used to wedge the props in place. They are usually split, but board ends, slabs, or other saw-mill waste is sometimes used. Although more numerous than the props, the total cubic contents of the caps used is a comparatively small item.

Room ties are used to secure the wooden rails. They are usually split, from one to three inches thick, and contain not over half as much timber as the props. It requires from one-fourth to one-half as many ties as it does props for the average mine.

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Wooden rails are generally used in the rooms and often throughout the mine. They are commonly sawed from beech on account of the wearing qualities of this timber. Trestle timbers, entry props and collars, although sometimes hewed, are usually sawed out of white oak or other durable timber. In the eastern region chestnut is the chief timber cut for entry props and it is generally used in the round. A comparatively small amount of timber is needed for brattice, which is sawed plank used to seal up old disused entries, and almost any quality or species is suitable.

The following table gives the approximate amount of timber in round numbers which was used in the production of the 10,436,000 tons of coal mined in Kentucky in 1907, together with the value of this material delivered at the mine. Only timber used inside the mines and that used outside for trestle timbers, tipple repairs, etc., is included. Material for the construction of houses and other improvement is not counted.

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TIMBER USED BY COAL MINES IN KENTUCKY.

DISTRICT.	Tons coal mined	Number cu. ft. split and round timber, per ton coal	Total number cu. ft.	Average price per prop.	Sawn timber M. bd. ft.)	Average price per (M. bd. ft.)	Total timber (M. bd. ft.)	Total value
Eastern Kentucky	4,275,000	.6	2,565,000	.03	4,275	$12.00	19,665	$143,606 00
Western Kentucky	6,161,000	.25	1,540,000	.04	6,161	14.00	15,402	147,862 00
Total	10,436,000	.....	4,105,000	.....	10,436	.....	35,067	$291,468 00

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From this table it is seen that about 4½ board feet of timber is used in the eastern coal field in the production of one ton of coal and only about 2½ feet in the western region, or an average of nearly 3½ feet for the State. The average cost for the entire State for timber alone is very nearly three cents per ton. This does not include the cost of placing it in the mine.

Coal Companies' Holdings.

Throughout the two coal fields, mining and development companies own or control the greater part of the more valuable coal lands. Two forms of tenure are common through the State, "fee simple" and "mineral rights," considerable variation existing in each form in the different localities. In Harlan and Bell about two-thirds of the total area of the counties is held in fee by large companies whose policy is to lease mining privileges to operating companies. This is a common practice all through the eastern coal field, especially so where the largest supplies of coal are found. Where the beds are considerably broken up, in the outlying counties of the region, smaller companies are found, usually holding their land in fee and often controlling additional mineral rights. In the upper Kentucky River counties little mining has yet been done, but the best coal land, varying from 25 to 40 per cent. or more of the area is held awaiting development. From 20 to 80 per cent. of this is owned outright by the companies. In the eastern region, mineral rights usually include the right to cut and remove as much timber as may be needed for the mining of the coal. Contracts vary but they usually stipulate that all timber below a certain diameter, generally 10, 12 or 14 inches, may be used for mining purposes. It is not clear what rights in the forest this conveys, but it certainly gives the companies enough interest to warrant them in entering into some mutual arrangement with the landowners for the protection of these woodlands against fire. In the chief coal-producing counties of the west, the mineral rights, which comprise from 25 to 75 per cent. of the acreage owned by coal companies, carry no surface rights at all or only such as are necessary for the removal of the coal. About one-tenth of Muhlenberg and Hopkins counties is owned by the coal companies with

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the mineral right leased on about half as much again. In the richer agricultural counties along the Ohio River much less land is owned by the coal men than in the mountains, but a much larger proportion is leased, sometimes more than 90 per cent. of the holdings, since mining can be done without interfering with the use of the land for agriculture.

The Necessity for Forestry.

Where prices of timber products remain comparatively stationary, forest land, like all safe and long time investments, can be counted on to yield only a comparatively low rate of interest, but where values are advancing, as they are at present in this country, returns are correspondingly larger. Of all timberland owners, excepting the Federal and State Governments, corporations can best afford to practice forestry on an extensive scale. Pulp companies, railroads and mining companies all need a steady and permanent supply of small timber, such as can be grown in a comparatively short rotation, for pulp, ties or props. Coal companies, however, have a distinct advantage, in that while the former corporations hold the land on purpose for the timber supply, the coal lands are held chiefly for their mineral wealth. The production of timber can be regarded, therefore, as an extra source of revenue, and the interest on the cost of the land can rightly be charged to the coal. Last year about 300 commercial mines were operated in Kentucky, and their average output amounted to something like 35,000 ton per mine. It would thus require about $1,000 worth of timber to run the average mine in one year. This seems a comparatively light expense, but when it is considered that the output of coal and the cost of operation are continually increasing, and the available supply of timber rapidly diminishing, the question of the future source of supply becomes important.

Taking the foregoing figures as a basis, it is seen that the average mine uses, exclusive of sawed building material, something like 120,000 board feet of timber annually. Assuming that the coal companies' lands are as well timbered as the average forest lands through the State, this would mean an equivalent of cutting over 40 acres of merchantable timber every year.

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It is estimated that the rate of growth of the present forest does not exceed 100 board feet per acre per annum. At this rate, 1,200 acres of forest land would be required to furnish a perpetual supply of timber to the average mine, producing 35,000 tons of coal each year. Many companies produce several times this amount of coal, so that their forest holdings would need to be enlarged accordingly, if they expect to furnish their own props. With the better management of the forest would come the gradual increase in the annual growth of the trees which would in some degree provide for an increase in the output of the mine.

Present Methods.

The large landholders in leasing to operating companies usually authorize them to cut and use all the timber required in actual mining operations, including the construction of buildings. Sometimes a few of the most valuable species such as cherry and walnut and the larger sized poplar are reserved. With this exception, the mining companies usually have absolute control of the timber lands on their lease.

But whether the operating companies lease the land or own it themselves, with a few exceptions, their method of handling the timber is very much the same. Contracts are made with local men to cut and deliver the props, ties and other timber at the mine. These contractors usually have an absolutely free hand to cut what they like and wherever they like. Of course they always cut what can be worked up the easiest and delivered the cheapest. One result is that the forest around the mines is devastated while that farther away is left very much in its natural state. Usually the only trees left are those too knotty or deformed to split well, or inferior species difficult to work into mining timbers.

The worst feature of the present system, however, is the great waste inevitable in logging operations when it is to the logger's interest to handle only the clearest, most easily worked timbers. On some tracts as high as 40 per cent. of the timber, although perfectly sound and usable, has been wasted. The logging operations are conducted with no reference to second growth or the future productivity of the forest. A great deal of valuable young growth is need-

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lessly smashed down and killed in the logging. The woods are left with much of the ground hardened and gullied, or covered with great piles of slash, and with a thin, irregular stand of inferior and defective trees which the logger did not consider it worth while to take. Another bad feature of the present management is its utter lack of system. The contractors who do the logging are constantly changing. There is no general direction of the work. Each new logger is given free swing, like his predecessor, to cut where and how he likes, instead of following any continuous or systematic scheme.

In a few instances only is any definite effort being made to keep out fire. As a rule, the burning of the woods both before and after logging, and the overgrazing of the surrounding forest by cattle belonging to the mines, together with the destruction of young growth in the process of logging make the regeneration of the forest an impossibility At least the reproduction of the more valuable species is prevented, and the renewal of the timber crops is postponed for an indefinite period.

Methods of Conservative Management.

The objects to be aimed at in the conservative management of the lands of mining companies should be two-fold, (1) to prevent waste by more complete utilization of the present stand of timber, and (2) to insure a future supply of timber by protecting the young growth now on the ground and by providing for the restocking the stand.

To accomplish the first object it will be necessary to have a more definite plan of operation and some one man whose special duty is to carry it out. A salaried woods-foreman should be employed in place of the one or more contractors now depended upon to provide the timber. His efficiency should depend, not only on his ability to get timber to the mine cheaply, but to leave the forest in the best possible condition. The woods-foreman should let out contracts for cutting and hauling timber and see that the logging rules are complied with. His work should be subject to inspection at any time by the engineer or other official designated by the company.

In order to utilize inferior timber, which on some properties is now the greater part of the stand, many companies

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would find it advantageous to establish small saw-mills in connection with the mines. Some have already done this, so that not only building material and the rough lumber used in the mines could be manufactured, but props, ties and caps could be profitably sawed instead of split, using up material that would otherwise be wasted. On one tract it was estimated that as many as 270 props per acre had been left on the ground in tree tops that would not split, besides about 800 props per acre in growing trees most of which could hardly be used without saw-mill. By using up this inferior material, not only is waste avoided, but the condition of the forest is greatly improved. Less inflammable material is left on the ground and more room is given for the better species to come in and develop. Beech, maple, gum and other inferior species are suitable for room props, and the removal of this material offers a better chance for the growth of poplar, white oak, chestnut and other valuable trees.

In encouraging the second growth and reproduction, the ultimate use of the timber must be borne in mind. If the chief object of the company is to grow props, the fastest growing species should be encouraged, black oaks or sweet gum in the west, and chestnut, poplar and the black oaks in the east. Hickory is used to supply the mine with pick handles, and should always have its place among the second growth. Ash, linn and cucumber are valuable trees of fairly rapid growth and should be encouraged on suitable situations. Pine and chestnut oak are the most suitable trees for dry rocky ridges, but only flourish in the mountain section. White oak and poplar are the most generally valuable trees in the State and should always be favored, excepting possibly where only shortlived props are needed. In such a case the white oak is of too slow growth to be considered.

The protection of the tract from fire is one of the first requisites of successful management. It should be the chief duty of the woods-foreman through a dry season to patrol the property and keep down fires. To assist in this, fire lines along ridges, old roads and other natural barriers should be opened up and kept clear of leaves. This is now being done successfully in a few cases. Where it is possible, the grazing of cattle on recently cut-over woods should be prevented or controlled.

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Planting on Waste Land.

Some mining companies own considerable amount of land that has once been cleared, but which has been abandoned because it was too poor to cultivate, or the company does not wish to have tenants on the place. This is often a pasture, which is growing up to briars, shrubs and scattered trees. Sometimes as much as half of the total holding is in waste land. Local conditions will determine the question of the advisability of planting this land to trees and no general rule can be given. If the cleared land can be used for pasture, thus keeping the stock from injuring the woodlands, this is probably the best use that it can be put to. If, however, there is more land than can be grazed profitably, and there is the prospect of a good future demand for mining props or other timber, it will in many cases pay to plant.

Exclusive of the nursery stock, which can be raised or bought at from $2 to $12 per thousand, according to species and size of plants, planting can be done at from $1.50 to $6 per acre depending on the condition of the area and the amount of subsequent cultivation given.

The species to be planted will depend on the soil and situation and the final uses for which the timber is desired. If the object is to supply room props, which are only necessary to last a year, there is no use selecting a species on account of its durability, but the fastest growing tree would be the one to plant. Usually a species that is known to flourish in the region should be selected, and often the kind of tree is suggested by the way it comes in naturally on old fields. For instance, counts taken on sweet gum in the western region of Kentucky show that on a fully-stocked stand 1,500 props 4½ feet long can be expected on an acre in 25 years on ordinary upland, while on wet bottomland as many as 3,500 proper per acre could be expected on an ideal stand in 40 years. It is probable that sweet gum, sycamore or catalpa would be the best species to plant on bottoms in the west, while for ridge land, sweet gum, sycamore and locust might be selected. Yellow poplar should be used on rich and well drained soil. In the mountain section, on areas where planting is advisable, yellow poplar, sycamore, hickory and walnut are suitable species, while in the higher altitudes, red oak and chestnut should be classed with yellow poplar for

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this purpose. Walnut and yellow poplar should usually be planted in mixture with some other species. Sugar maple as a rule, makes a very good filler.

Co-operation with the State.

As soon as Kentucky adopts a forest policy and appoints a State Forester, some scheme of co-operation might be arranged which would be of great mutual advantage to the coal mine operators and the State. The preservation of the forest cover on the mountain slopes at the headwaters of the principal streams should be the duty of the State, as the regulation of the flow of a stream affects all the country along its course. If the State were to furnish assistance and advise through the State Forester to the owners of forest lands on condition that a forest cover is maintained and the plans of management suggested are followed as far as practicable, a great deal would be accomplished. The co-operative method could also be applied in solving the fire problem. If the system of fire protection recommended by the Forest Service is adopted, a fire warden will be employed in most of the counties, and paid half by the county and half by the State. He is not authorized by the proposed law to patrol except in times of extreme danger. Large land-owners, therefore, can well afford to contribute enough so that this man may be employed throughout the year. He would then be able to devote all his time to the work of patrol and fire protection. This would not only increase the present safety of their property, but, what is more important, would influence public opinion and hasten the time when all the people will combine to prevent forest fires.

Where the possession of mineral rights confers the additional right to cut all timber below a certain diameter usually 12 to 14 inches, there is often some question as to how this affects the ownership of the young growth. If these rights could be defined by the courts, one of the chief obstacles to forest protection would be removed and the forests might be protected by the owners of the young growth or preferably by the two owners jointly.

A simpler plan for the settlement of this difficulty would be the purchase outright by the coal companies of all the woodland under which the companies own miners'

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rights, allowing the owners to reserve the merchantable timber and giving them ample time to remove it. Rules for the logging of these lands should be inserted in the contract of sale, so that in practice, the forests could at once be put under conservative management, even though the large timber remained in the possession of another.

The working out of a scheme of co-operation would have to be done by the two parties concerned, and the preceding outline is only given in order to suggest the lines along which such a scheme may be developed.

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APPENDIX II.

BLACK LOCUST IN KENTUCKY.

Distribution.

Black locust is said to have been indigenous only to the more southern part of the Appalachian region, although it is now found widely distributed over the eastern half of the United States. It reaches its best development on the western slopes of the higher mountains of West Virginia, Virginia, North Carolina and Tennessee.

Through the mountains of Kentucky locust has been a common tree scattered singly through the forest, but where the means of transportation allowed, it has been largely cut and removed. The large virgin locust is now restricted to the steep slopes at the heads of the larger streams in counties remote from railroads. This disappearance from its natural habitat is being more than compensated for by its growing abundance and importance in the agricultural regions farther west. All through the limestone region of Kentucky from Greenup County westward, but more especially in the blue-grass region, black locust seems to come in naturally on abandoned fields, in fence corners, pastures and even in cultivated fields. It occurs chiefly in more or less even-aged groups from a few square yards up to several acres in extent. It is usually unmixed with other species, although the groups are often interspersed with hickory, gum, oak, poplar and other trees common on land that has once been cleared. In some parts of the State, where this species does not naturally come in with readiness, planting has been resorted to and young groves of considerable extent are found.

Uses and Markets.

Several years ago, the splitting of locust pins, or "tree-nails" as they are called in the markets, was common through the mountains, but this tree has become so scarce, except on

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a few tracts held by large companies, that this local industry has entirely disappeared. Locust is also occasionally cut for wagon hubs, insulator pins and other miscellaneous uses. Some locust cross-ties are occasionally cut and sold along with white oak and black walnut, the durability of this wood in contact with the ground making it very useful for this purpose.

But the chief value of this tree is in its desirability for fence posts, for which use it is principally grown in Kentucky. The strength and durability of the wood, combined with its rapid growth and adaptability to various sites, makes it an ideal tree to grow for this purpose. Locust posts will last in the ground on an average of from fifteen to twenty-five years, although large posts have frequently lasted fifty years or more. Locust, wherever procurable, has always been in great demand for fence posts, although white oak, post oak, chestnut, sassafras and other trees have been used largely in many parts of the State for the same purpose.

With the growing scarcity of trees suitable for posts, the demand for locust is increasing. Usually the supply is totally inadequate to the demand, but from a few places, notably the belt of counties along the northwest border of the mountain region, posts are being shipped. Here the grades and prices run about as follows:

LOCUST POSTS.

	Length	Top diameter	Weight per post Pounds	Price On farm Cents	Price At R. R. Cents
No. 1	7.5 ft.	3 in.-4 in.	50-60	11-13	14-16
No 2	7.5 ft.	2.5 in.-3 in.	25-40	8-10	10-12
No. 3 (cull)	7.5 ft.	2.5 in. up		5-8	

No. 3 posts are usually not marketable and are used by the farmers on their own land. Grades 1 and 2 are sold at distributing points at from 20 to 25 cents apiece.

In those western counties where most of the land is under fence, locust is much scarcer and the price for very ordinary posts for local use, taken as they come, is from 20 to 25 cents apiece.

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Form and Habits.

Black locust in the virgin forest attains, under favorable conditions, a height of from 40 to 50 feet and a diameter of from 1 to 2 feet. The bole is straight, with little taper, and the crown small and irregular. In the open, however, and in groups in the old fields, a height of from 40 to 50 feet and diameter of from 12 to 18 inches is rarely exceeded, while the crown is large and spreading and the comparatively short bole often crooked and forked.

This tree will thrive on any well-drained soil, but does best on a deep, fertile loam. In the rich coves and slopes of the mountains and on well-drained knolls and slopes of the limestone region it attains its best development.

In common with the other members of the pea family, locust has the ability to improve the soil in which it grows by the action of certain microscopic organisms living in the roots. These bacteria have the power of taking nitrogen, the most valuable part of plant foods from the air and making it available for the roots of plants. It is this power which allows locust to flourish even on the poorest land and it is probably because these organisms can not live in a wet soil this this tree will not succeed in poorly drained situations.

Locust has a shallow root system, reaching out to long distances, remaining in the surface soil because of its permeability to the air and its consequent suitability to the life of the nitrifying organisms.

It is these spreading roots that furnish the most vigorous reproduction, by sending up root sprouts far enough from the tree to escape its shade. Wherever a root is injured, either by the plow, the trampling of stock, or other means, strong sprouts come up. Whenever a tree is cut down in the open, sprouts also develop from the roots and stump. It is this habit which is responsible for the many small groves of locust seen all over Kentucky. Locust is also a prolific seeder, and where soil conditions are favorable, much seedling reproduction is found. The seed hangs on the tree most of the winter, and is widely scattered by the wind, attached to the split pod.

During all periods of its life, locust needs full light for its proper health and development. Even the shade of its own crown, which generally admits enough light to allow

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the better pasture grasses to flourish, effectually prevents both sprouting and seeding reproduction. It is for this reason that most of the groves are approximately even-aged.

Diseases of Locust.

The most important disease to which locust is subject is the locust borer (*Cyllene robiniae*).* This is a cerambycid beetle which lays its eggs on the bark of trees of all ages. The larvae enter the tree as soon as they hatch, and bore in the wood, seriously injuring the quality of the timber and often eventually killing the tree.

Injury caused by this insect is found all over Kentucky, but in some locations it is much worse than in others. On situations where locust does not grow thriftily, as on poorly-drained soils, the borer is very destructive, so that these lands should never be planted to this tree. On more favorable situations the trees are generally able to so far overcome the effects of the borers that posts can be produced with reasonable certainty in all parts of Kentucky. Single rows along a fence or single trees are much more likely to be injured than trees in a grove, though even here from 50 to 90 per cent. of the trees are usually attacked before they are twenty years old. A few precautions for combating this pest are given by Dr. Hopkins, chief among which are the following:

1. Trees should be cut for commercial use only between October and April, and all the bark should be peeled off. This will destroy the hibernating larvae before they enter the wood.

2. Badly infested trees should be cut and burned some time between the middle of May and the time when the flowers fall. This is to kill the borers before they emerge to deposit their eggs.

3. In the case of shade or ornamental trees, spraying the trunk some time during the winter with kerosene emulsion will kill most of the larvae that are in the bark. This process, however, would probably be too expensive for commercial plantations.

*For a full discussion of this pest with recommendations for its control, see Circular 83, Bureau Entomology, "The Locust Borer," by Dr. A. D. Hopkins.

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Another common insect pest, the locust leaf beetle (*Odontola dorsalis*) does great damage by wholly or partially defoliating entire groves of locust throughout the blue-grass region. Often 20 per cent. of the locust on a farm is attacked, generally during July, the tops turning yellow and then brown as the season advances. Often practically all the leaves on a tree are killed and a second crop of leaves will come out. This naturally weakens the tree, but unless an early frost kills this second crop of leaves before they are mature, the tree does not seem to be permanently injured. In case of shade trees, spraying with Paris green might be resorted to in order to kill these beetles, but it would not pay to do this on a commercial scale.

The chief fungous disease of the locust is *Polyporus rimosus,* the fruiting body of which is found on the trunks of many old trees. As this is seldom seen on the young locust, it is of very minor importance in stands that will be cut in twenty-five or thirty years.

Growth.

During early life the black locust is a rapid grower, and in open lands and plantations it reaches its maturity at a comparatively early age. The sprout from stumps or roots naturally starts off more rapidly than that of seedlings, but after a few years little difference can be detected between the size of seedlings and sprouts.

Growth in diameter varies according to the amount of space occupied by the crown. The larger the crown, the more rapidly will the tree increase in diameter. Up to 10 years of age, trees in a close stand should increase in diameter at the rate of about one-quarter of an inch a year, while trees in the open should double that rate of growth. Trees in such situations often attain a diameter of 11 inches in twenty-five years, while in a close stand they will only reach an average diameter of something over six inches in the same time.

The following table based on measurements of 54 trees taken in Estill County, Kentucky, shows the rate of growth in stands of varying density. It is inserted here merely to give some idea of what growth may be expected from black locust in Kentucky.

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Volume Growth of Black Locust

Age Years	Diameter breast high	Posts per tree Number
10	2.7	1.1
15	4.1	1.1
20	5.2	1.6
25	6.2	2.0
30	7.1	2.6
35	7.9	3.1
40	8.7	3.8

The most rapid period of height growth is before the fifth year, during which period thrifty trees will grow at the rate of three feet a year. At the end of ten years healthy trees should be 25 feet high, while at thirty years they should have attained an average height of 40 feet. After this time this time the average second-growth tree increases very little in height. Height growth is encouraged by restricting to some extent the amount of light the tree receives. By letting the light come only from above the tree is forced to grow in length to procure all the sunlight it needs. This is why trees are planted closer together than they are expected to be in the mature stand.

The clear length or height to which the tree is merchantable varies according to the density of the stand; the closer the trees are together, the longer is the clear length. The merchantable length increases quite rapidly with increase in diameter, for while a four inch tree will average only seven feet of merchantable length, or one fence post, a six inch tree should cut 14 feet, and a nine inch tree, 23 feet, After the three-post length is reached, the merchantable length will increase but very little.

The growth in volume of black locust continues at a fairly regular rate, longer than the height or diameter growth. From actual measurements and estimates made in eastern Kentucky, the following table has been constructed, giving the volume in fence posts seven feet in length and large enough for sale or use.

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Black Locust.

Years Age	Growth in Diameter. Close stand Breast high Diameter Inches	Broken stand Breast high Diameter Inches	Open stand Breast high Diameter Inches
10	2.7	3.8	5.0
15	4.1	5.5	7.3
20	5.2	6.8	9.3
25	6.2	8.0	11.1
30	7.1	9.0	
35	7.9	9.9	
40	8.7		

From this it is seen that an average of two posts per tree can be expected at the end of twenty-five years and nearly four posts at the end of forty years. It is believed that these figures are quite conservative, especially so for regions where full-sized posts are not always demanded by the market.

Planting.

Since black locust is not very exacting as to soil condition, it can be planted on thin soil, washed slopes, old fields, or other areas too poor for agricultural purposes. On such situations locust stands, when once established, tend to prevent erosion and add fertility to the soil. A thick sod is often formed which in addition furnishes valuable pasturage.

Nursery stock, where it can be obtained, is the most satisfactory for commercial planting, because of the large, well-developed root system of trees grown in a good seedbed. One-year-old plants, 12 to 14 inches in height, have usually succeeded best in different parts of the State where planting has been tried.

Black locust seedling can be purchased from various nurserymen* both within and without the State at from $2 to $12 per thousand, according to the size and age of the plants.

Spring planting is advisable throughout the State because of the large loss through heaving if planted in the fall. The plants should be put in just as soon as the ground can be worked in the spring, so that the roots may become well

*A list of nurserymen who deal in locust and other forest tree stock can be obtained on application to the Forester, Washington, D. C.

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established before the summer drying out of the soil takes place.

The ground should, if possible, be cleared of briars and brush and plowed as if preparing for a corn crop. Where groups of young forest growth occur in the old fields, these may be left and locust planted around them. Large open areas may be cleared up and planted. Abandoned fields should be planted as soon as possible after the last crop has been taken off, as the land is then in the best condition for the growth of the plants. On steep, badly eroded slopes and on sod land it will often be best not to plow the land.

As locust has a wide-spread root system and demands full light for its crown, the plants should be given plenty of room. Spacing not closer than six by six feet and not farther than eight by eight feet seems to bring the results. Planting should be done carefully, seeing that the earth is well packed around the roots in every case. To get the best results, a locust plantation should be cultivated from one to three time during both the first and second seasons. This keeps the weeds from choking out the young plants, and at the same time greatly increases the moisture content of the soil. In order to secure a straight stem and to prevent useless growth, the trees may be pruned at the end of the first year. They should in any case be pruned in the fall of the second year, cutting off all the lower side branches close to the main stem, and leaving only the upper, straight-growing part of the tree.

The cost of starting a locust plantation depends on the nature of the ground, the amount of soil preparation that is necessary, and the amount of subsequent cultivation that is given. The following figures are based on actual costs of plantations in various parts of Kentucky, although they do not, of course, include extreme conditions. The cost of plant material varies so greatly and is so much a matter of individual preference, that it is not included in this estimate.

Cost per acre of establishing a black locust plantation in Kentucky:

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Cleaning up the ground	$0.50	to	$1.50
Preparation of the ground and planting	2.00	to	3.00
Cost of cultivating—three times	1.20	to	1.50
First year, total cost of labor	$3.70	to	$6.00
Cost of cultivating—three times	$1.20	to	$1.50
Cost of pruning	1.20	to	1.50
Second year, total cost of labor	$2.20	to	$3.00
Total cost	$5.90	to	$9.00

MANAGEMENT OF LOCUST.

The chief value of the black locust in Kentucky is not as a forest tree, but for growing on lands that have once been cleared, and have been temporarily or permanently abandoned on account of crosion or the poverty of the soil.

All pure stands, whether plantations, groves of sprout origin or scattered seedling trees in old filds should be managed primarily for the production of fence posts, as timber suitable for this purpose is getting scarcer every year, while the demand for posts is steadily increasing. This tree is especially adapted to a short rotation because of its rapid growth while young. The chief aim, of course, is to produce the largest number of good posts in the shortest possible time.

The first step in growing locust is to get enough young trees on the ground to utilize all the space, without being crowded enough to hinder their development. This can best be done by planting. Sprout growth, however, often naturally forms a denser stand than a plantation because of its more rapid initial growth.

Pruning is not generally advisable in a sprout "volunteer" grove, because of the great variation in the requirements of the trees due to irregular spacing. In plantations one or possibly two prunings are sufficient.

Thinning may be started with advantage as soon as the weaker trees begin to be overstopped and shut out from the light by the stronger, more thrifty trees. By removing these weaklings, which if left would never make anything, more light will be given the trees that are already thrifty and fast-growing. However, care must be taken not to leave any large openings, as too much side light will induce the formation of

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branches along the trunk, and tend to reduce the growth in height that is most desired at this stage. A good rule is to leave the trees close enough for their crowns to touch without overlapping, so that in five years' time a dense cover will again be formed.

Fire is very destructive to locust and it should be kept out at all costs. Fortunately the usual situation of locust in old fields and blue grass pastures makes the danger from fire less serious. On account of their large, strong thorns, locust is not very subject to injury by cattle. Stock should be kept out of groves and plantations for three or four years, or until the tops to the trees are out of reach. After this time cattle and sheep will probably do more good than harm by knocking off the low side branches and keeping down weeds and briars. Excellent pasture is often furnished by blue grass growing in locust groves.

When the stand reaches maturity, which should be at the age of from 25 to 30 years, it should be cut clear and the locust allowed to sprout up again from the stump and roots. In some cases it is better to cut out the crooked, diseased and dying trees and leave a few of the thriftiest ones to grow. It possible, trees should not be cut during July, August or September, as they are then in their weakest condition; their sprouting capacty is very much reduced, and the young sprouts are liable to be killed by the frost before the young wood has time to harden. The sprouting capacity of a stump is at its best when it is cut as low as possible. This should always be done, not only to encourage sprout reproduction, but also to prevent the waste of merchantable timber.

Sometimes the soil may be so much improved by the crop of locust that instead of encouraging reproduction it may be desirable to clear the land for agriculture. In this case the destroying of the sprouting capacity of the stumps is what is needed and the trees should be cut in late summer or early fall. Locust might even become part of a regular farm rotation of thirty years, twenty-five years of locust and five years of annual crop, then locust for another period of twenty-five years.

Yield and Profits.

Since locust makes the most rapid growth in early life, it is most profitable to cut for posts when the trees are about

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25 years old. At this time trees under ordinary conditions will have an average diameter of from six to seven inches. As in the case of any other crop, good soil and careful cultivation will result in much better growth than the average, and larger trees can be expected under more favorable conditions.

From plantations already established, it is estimated that stands 25 years old will yield at least 400 trees to the acre with an average of two posts per tree. Posts raised in such plantations would be of excellent quality and should sell for a least 20 cents apiece. This would make the crop at the end of twenty-five years worth $160 per acre, which is equivalent to about nine per cent. compound interest on the investment. This investment includes the value of the land, the cost of establishing the plantation and the annual taxes. In this case the value of the land is assumed as $5 per acre and the annual taxes as $0.05 per acre. The cost of planting and cultivating is estimated at $10 per acre. A thinning between the ages of 15 and 25 years should yield enough in posts to pay for the operation.

These figures are conservative, since land suitable for locust may in many places be secured for less than $5 per acre, and often land may be used which has practically no value apart from the farm with which it is connected. Moreover, it a man wishes to use posts on his own farm they are worth more to him than the market price of posts at a point several miles away on the railroad, from which he must haul them in case he is not raising his own supply. In all probability, the posts will increase considerably above the figure used by the end of twenty-five years, which will further increase the profits.

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REPORT

OF

STATE IMMIGRATION CLERK

FOR

1910-1911

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REPORT OF STATE IMMIGRATION CLERK FOR 1910-1911.

NOVEMBER, 1909.

Louisville, Ky., Dec. 1, 1909.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of November I sent out the following persons:— James Saunders (Ill.) to W. R. Stephens, Louisville, as a farm hand at $18.00 per month and board; Floyd Carte, wife, to Ross Chair Co., Louisville, Kentucky, at $1.50 per day; the following men to the West Loke Construction Co., Louisville, as laborers at $1.75 per day; H. Dryer (Germany), Henry Winter, mother and sister; Harry Middleton (Kan.); William Wagner (Ga.); Robert Mitchell, Harrison Dyer (Ohio); James Standifer (Tenn.); Fred Caugg (Switzerland); Lloyd Dillard, George Brewer and wife (Penn.); B. F. Short (Ind.); William Beuter (Ohio); John Theiring and wife, Herman Prauer (Ind.); G. W. Bates, mother, D. S. Johnson, Morris Andrews, William Malory (Ohio); Joe Harris, wife and two children. The following men to Smethurst & Allan, contractors of Anchorage, Kentucky; as linemen at $3.00 per day, W. D. Gammel, wife and four children, A. R. Sinclair (Tenn.); Frank Moore, wife, mother and sister, H. W. Rogers, H. J. Eddy, son and sister (Washington, D. C.); W. R. Bright, mother and sister, Thomas Kearney, wife and three children (Ohio); Kirk Howard (Kan); J. J. Brott, wife and two children (Mich.); James Brodas, mother and two sisters; G. A. Johnson and wife, Dennis Lindsey and wife, Joe Wright, wife and three children, R. H. Johnson and mother, S. W. Meade, wife and child (N. Y.); J. E. Brown and mother, W. B. Twyman, wife and two children, George Stansbury and wife. The following men to Smethurst & Allan, contractors at Anchorage, Ky., as groundmen at $1.75 per day, James B. Robertson, J. C. Dawson, Rich Brown and wife (Ohio); Tom Farley, wife and

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two children (N. Y.); Delbert Suel and wife, H. J. Bell, James Ryan (England); William Harrison, A. W. Lawson and wife, H. A. Miller, wife and four children (Tenn.); Paul Underwood (N. Y.); W. M. Whitehouse, Sam W. Montgomery, wife and child, Sam Veal, wife and two children, John Smith, J. W. Hardin (Ala.); William Beuter (Germany); Henry Gerdes and mother (Germany); Frank Feeney and mother, Walter Clements, H. Dryer (Ill.); Larkin Presley, Leo Wellington and wife (N. J.); George Smith (Tex.); Pat Ryan, Joe Clark (Ohio); Sam Hirsch and mother (N. Y.); T. L. Middleton, Charles Bryant (Cal.); F. L. Walton (Ill.); Harry Williams to W. R. Stephens, Louisville, Ky., as a farm hand at $18.00 per month and board. The following men to the Illinois Central Railroad Company, Louisville, Ky., as laborers at $1.75 per day, Henry Ellar, wife and child (Mo.); Boyd Helm (Tenn.); Major Thompson (Tenn.) The following men to the Howe Co., Louisville, Kentucky, as machinists at $2.50 per day, L. P. Atterbury, Thomas Willis and mother , Pete Strange, wife and four children, Chas. Logston, wife and four children, W. M. Whitehouse, Jacob Ruhs, wife and three children, Sidney Vardeman, Earl England; James Baugh, wife and three children (Tenn.); to L. Dorsey, Lakeland, as a farm hand at $25.00 per month, house rent, garden and fuel.

Total sent out one hundred and sixty-eight. Number of immigrants, sixty-seven. There registered at this office during the month of November, one hundred and eighty-seven people.

Respectfully submitted,
E. J. Green,
State Immigration Clerk.

DECEMBER, 1909.

Louisville, Ky., Jan'y 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of December I sent out the following persons: The following men to R. A. Koerner, contractor, Simpsonville, Ky., as laborers at $1.75 per day, O. G. Scholz (S. Penn.); W. F. Fay and wife (Ohio); Mike Haney (S. N. Y.); S. E. Brooks and wife (N. Y.); John Berdon (S.); Frank Masters

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(S. Ohio); James Warner (S. N. Y.); C. H. Johnson, (S.,) Carl Randolph and wife (Pa.); G. W. Turner and wife, Geo. Sweeney (S., Pa.); John Patterson and wife (Ind.); Miles Martin and wife (Ind.); William Mattin, wife and two children (Ind.); Fred Benninger (S. Mo.); Hugh O'Gara and two sisters, John Edwards (S., Ill.); Geo. Gaunt, (S.,); Geo. Baker, (S.,); John H. Northcutt and wife (Ala.); J. W. Stucker and wife (Ind.); Peter Ball, wife and five children, Nelse Martin (S.,); H. E. Reed (S.,); Ed. Burke, (S.,); Frank Peterson, wife (South Am.); John Miller (S.,); M. C. Wallace (S.,); John Connelly, (S.,); also J. C. Brown and wife to the same firm as a lineman at $3.00 per day. To the Falconer Electrical Construction Co., Louisville, Ky., the following men, as laborers, at $1.75 per day, J. A. Edwards and wife (Ill.); Henry Bosarge, wife and child (Ala.); J. C. Adder (S.,); Ed Doyle (S., O.); Fred Brucker and mother, Clarence Lutz (S.,); Leroy Gimbel and wife (Ind.); Geo. Gant (S.,); Geo. Shook, wife and two children (Tenn.); Geo. Schafer and wife (Ind.); William Schamer, wife and four children (Ind.); H. Dyer (S., O.); Arthur Place, mother and two sisters (Ind.); Marshall Bouvier, wife and three children, Geo. Cuttle (S.,); B. F. McKenzie (S.,); Mat Connaughton (S.,); Tom Scally (S.,); R. H. Hollis (S.,); John Seadler and wife (Ind.); R. M. Brown (S.,); Joe Collins (S.,) Herman Pruel (S.,); Joe Lindler (S.,); John Newman, wife and two children, also the following colored men, Clifford Brown and mother (Ga.); Jim Loveless (S., Ga.); Frasae Reed (S., Ind.); Luther Brown (S.,); Clif Ragan, (S., Ala.); Joe Potter (S.,); William Brown, wife and child, J. H. Wales, wife and child, Geo. Jones and wife (Pa.); Charles Gaffney, wife and two children, William Smith (S.). Also the following men to R. A. Koerner, Simpsonville, Ky., as laborers, at $1.75 per day, Jos. Davison (S., Ill.); John Kelley and mother (Penn.); William Lenahan, (S., O.). The following men to the West Lake Construction Co., Louisville, Ky., as laborers, at $1.75 per day, Fred Schmidts, wife and child (Ind.); John Fitzpatrick (S., O.); T. L. Middleton (S.); Frank Feeney and mother, Edward Caulfield, wife and child (Ireland); Otto Doerfer (S., Germany); R. G. Johnson, mother and sister (Tenn.); Edward Biel and wife (Ind.); Emery Schaefer and father, Orie Phillips, wife and two children (Ind.) To the Falkenau Electrical Construction Co., Major Thompson (S., Tenn.); as a

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laborer at $1.75 per day, Halla Hathaway as a house-keeper at $2.50 per week and board to Mrs. Mance, Louisville, Ky. Frank Carrier and wife, as a farm hand at $1.25 per day to Harry Bishop, Jefferson County, Ky.

Total number sent out, one hundred and fifty-one. Number of immigrants, eighty-one.

Respectfully submitted,

E. J. GREEN,
State Immigration Clerk.

JANUARY, 1910.

Louisville, Ky., Feb. 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of January, I sent out the following persons: The following men to K. & I. Bridge Co., Louisville, as laborers at $1.50 per day, Jacob Ruhs and wife (Ind.); Frank Feeney and wife, Martin Hart and wife (N. Y.); Gus Wilburn and wife (N. Y.); Herald Davis (S.); Joe C. Broan and wife (Ind.); James Lahue and wife (Penn.). To Galt House, Louisville, as laundry help at $5.00 per week, Mrs. Edna Howard (Colo.); and Alice Reed (Ind.); William A. Ferrell, wife and child (Tenn.); to W. L. Simcoe, Jefferson county, as a farm hand at $25.00 per month and house. W. H. Taylor and wife (Ill.); and Chas. Brown to C. W. Hesson, Leitchfield, Ky., as farm hand at $16.00 per month and board. Jessie Porter, wife, to American Steel and Wire Co., at $1.00 per day as a laborer. John Gillespie and wife (Ind.); to W. H. Stevens, Jefferson county, at $25.00 per month and board, the man to work on farm, the woman to do housework. John Taylor and wife (Ind.); to Murray Kline, Anchorage, at $25.00 per month and board, the man to do farm work. W. G. Robards, wife and two children, to J. L. Anderson, Greensburg, to raise crop on the shares. Fred Zedugg, Switzerland, to C. W. Hesson, Leitchfield, as farm hand, at $16.00 per month and board. S. E. Brooks and wife (N. Y.); to C. & O. R. R., Lexington, as a machinist, at $3.00 per day. W. J. Hall and wife (Va.); to Globe Tailoring Co., Louisville, at $7.00 per week. Rudolph Platter, (Switzerland); to C. W. Hesson, Leitchfield, as a farm hand at $16.00 per month and board. John Langager (N. Y.); to Ed Cook, Cecelia, as a farm hand at $16.00 per month

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and board. Robt. Mitchell and wife (Ill.); to National Biscuit Co., Louisville, at $1.00 per day as a laborer.

Total sent out, forty; number of immigrants, thirty.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

FEBRUARY, 1910.

Louisville, Ky., March 1, 1910.

Hon. M. C. Rankin, Chairman,

Frankfort, Ky.

Sir:—I respectfully report that during the month of February I sent out the following persons: George McIntyre and wife (Ind.); to S. L. VanMeter, Lexington, Ky., the man to work on farm, the woman to do house-work at $25.00 per month and board. John Theiring, wife and child, to Long Towel Supply Co., Louisville, Ky., at $1.00 per day. T. M. Blackburn to C. H. Hesson, Leitchfield, Ky., farm work at $14.00 per month and board. Shelby Baker to O'Connel Transfer Co., Louisville, Ky., as a teamster at $9.00 per week. Ray Craw and wife (N. Y.); to Ed Cook, Cecilia, Ky., at $17.00 per month and board as a farm hand. The following men to the Kentucky and Indiana Bridge Co., Louisville, as laborers at $1.50 per day; C. W. Vanblaricum and wife (Ind.); T. P. Gardner, wife and three children, (Ind.); Joe Collins (S.); George Collins and wife, Elijah Hansborolongacher, wife and child; A. Curry, wife and three children; John Callahan and wife (Tenn.); R. M. Gillespie and wife (Tenn.); Ed Bass, wife and child; Thos. Farley, wife and three children (N. Y.); E. F. Lee, wife and three children (Ohio); Henry Willen (Ohio); Claude Blackburn, Ben F. Short (Ind.); Patrick Mahoney, Canada, Ed. Feeney, Valentine Fendt, wife and two children, Henry E. Voget, Chas. Brown, Wm. Bright, wife and child, Geo. Brewe and wife (Penn.) The following to Smethurst & Allan, at Simpsonville, Ky., as laborers at $1.75 per day, John Eahart, Thos. Cunningham (Ohio); Frank Schmidt (Ohio); Ed. Herman (Mich.); and Geo. Watts.

Total number sent out, sixty-six. Number of immigrants, thirty-three. Number of residents of the State, thirty-three.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

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MARCH, 1910.

Louisville, Ky., April 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that I sent out during the month of March the following persons: Katurah Ellis and John Ellis (Ill.); to G. W. Frank, Louisville, Ky., at $4.00 per week and board; Adolf Hirschmann, wife and two children (Germany); to Frank Gotbrath, West Point, Ky., as a farm hand at $25.00 per month, house rent, garden and fuel; William Harrington, wife and seven children to H. C. Hesson, Leitchfield, Ky., as a farm hand at $25.00 per month, house rent, garden and fuel; George Lachman, (S., Penn.); to Ed Cook, Cecilia, Ky., as a farm hand at $17.00 per month and board; Joseph Wagner (La.); to Henry Bedinger, at Anchorage, Ky., as a farm hand at $18.00 per month and board; Chester Snyder (S., Ind.); to Mrs. M. D. Terry, Cecelia, Ky., at $15.00 per month and board, as a farm hand; Wm. Englands (S.); to Henry Bedinger, Anchorage, as a farm hand at $18.00 per month and board; J. J. Douglas, wife and three children to Frank Gotbrath, West Port, Ky., as a farm hand at $25.00 per month, house, garden and fuel; Mary Figg, and five children, to New York Laundry, Louisville, Ky., at $9.00 per week; Wm. Carr, wife and two children (Okla.); to W. P. Griggsby, Louisville, Ky., at $1.50 per day; Thos. Farley, wife and two children (N. Y.); to Henry Bedinger, Anchorage, Ky., as a farm hand; Orville Rogers, to Woodson Lewis, Greensburg, Ky., as a farm hand at $30.00 per month; Gilbert Klotz (S.); to Independent Pole and Shaft Co., Louisville, Laborer at $1.50 per day; Ed. Feeney, to Long Towel and Supply Co., Louisville, Ky., at $1.00 per day; David Wheeler, wife and two children, to West Lake Construction Co., Louisville, at $1.75 per day; F. M. Ingram and wife to West Lake Construction Co., Louisville, Ky., at $1.75 per day; Chas. Beckman and wife, (Ind.) to Ben Ott, Louisville, Ky., as a laborer at $1.25 per day; Orville Rogers (Ind.); to Ben Ott, Louisville, Ky., as a nailer at $9.00 per week; David Wheeler, wife and two children, to Ben Ott, Louisville, Ky., as a laborer at $1.25 per day; J. W. Corbin (S., Okla.); to Fountain Ferry Park, as a carpenter at $3.20 per day; David Seaman and wife (Ind.); to White City a a carpenter at $3.20 per day; John Nelson,

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wife and child (Minn.); to Avery Plow Works, Louisville, Ky., as a carpenter at $3.20 per day; Lee Beghtol, wife and child (Md.); to West Lake Construction Co., as a carpenter at $3.20 per day; J. Browning, wife and three children (Ill.); John Smith and mother, and Geo. Long (Ind.); to C. W. Adams, Anchorage, as laborer at $1.50 per day.

Total sent out, sixty-eight. Immigrants, thirty-five.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

APRIL, 1910.

Louisville, Ky., May 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of April I sent out the following persons: Andrew Mathis and wife (Tenn.); and John Meyer and wife (Ill.); to W. F. Schulte, Roger Station, as farm hands at $20.00 per month and board; Jacob Buchi (Switzerland); to Henry Bedinger, Anchorage, at $18.00 per month and board, as a farm hand; Forest Rogers (S.); to Henry Badinger, Anchorage, as a farm hand at $20.00 per month and board; Fred Kaut and wife, Joseph Martin, wife and two children, Edward Martin (S.); and Charles Martin (S.); all from Germany, to J. E. Madden, Lexington, as farm hands at $20.00 per month and board; Edward Rankin and wife (Ind.); to W. M. Wigginton, Louisville, as a clerk at $8.00 per week; Robert Nicholson and mother (Ohio); and Elmer Link and mother (Ohio); to W. F. Schulte, Rogers Station, as farm hands at $20.00 per month and board; Mattie Jackson, son and daughter, to Preston Hotel as cook, at $6.00 per week and board; Maru McHargue and two daughters, to N. Y. Laundry, at $4.00 per week; W. P. Campbell and wife (Ala.); R. M. Gillespie (S.); and Leslie Williams, to W. F. Schulte, Rogers Station, as farm hands at $20.00 per month and board. The following men sent as laborers at $1.50 per day to the Standard Sanitary Manufacturing Co., Louisville, Albert Keselring and wife (Ind.); Wm. A. Giltner, wife and five children (Ind.); Thos. Carney, wife and three children (N. Y.); Harry Robard and mother (Ind.); Y. Makransky, wife and two children (Russia); Leonard Kerrick (S.); R. W. Carr, wife

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and child (Okla.); S. E. Brooks (Ind.); Wm. Henry (N. Y.); Arthur Hash (S.); Wm. Kirkpatrick and wife (Ala.); John Burgess (S., Ind.); J. S. Daviss, Oren McMonigle, wife and two children (Ind.); Jos. Haegher, wife and three children, Richard Stevenson (S., Ind.); and Wm. Brown (S., Ind.); Eva Thayer and two children (Ill.); to G. W. Frank, Louisville, as domestic at $4.00 per week and board; Christian Schuntz, wife and eight children (Switzerland); and Jacon Glauser and wife (Switzerland); and Fred Glauser (Switzerland); to John E. Madden, Lexington as farm hands at $20.00 per month and board; David Wheeler and wife, to Kosmodale Cement Co., as laborer at $1.50 per day; James Boyland (S., Ind.); to Henry Bedinger, Anchorage, as a farm hand at $18.00 per month and board; Ernest Grossman (S.); Thos. Sullivan (S.); and Pat Murphy (S.); to Kosmodale Cement Co., laborers at $1.50 per day; T. L. Duffy, wife and five children to Ben Ott, Louisville, as a laborer at $1.50 per day.

Total sent out, one hundred and three. Number of immigrants, seventy-two.

Respectfully submitted,
E. J. GREEN,
State Immigration Clerk.

MAY, 1910.

Louisville, Ky., June 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of May, 1910, I sent out the following people: Presley Larkin and wife to West Lake Construction Co., Louisville, Ky., as a laborer at $1.75 per day; Lula Eppel (Ind); and Julia Simons (Ind.); to J. C. Ivins, Louisville, Ky., as domestics at $3.00 per week and board; Mary Hurston and Lillie Letcher and husband to Mrs. D. Stewart, Louisville, Ky., as domestics at $4.00 per week and board; Bertha Burts and child to Mrs. Rice, Louisville, Ky., as a domestic at $3.50 per week and board; Robt. Carpenter and Thomas Quinn (Ill.); to Ed Cook, Cecelia, Ky., as farm hands at $18.00 per month and board; T. M. Blackburn and wife, to H. C. Bedinger, Anchorage, Ky., as a farm hand at $18.00 per month and month; Nick Jacoby and wife (Ill.); to H. C. Bedinger,

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Anchorage, Ky., the man as farm hand, the woman to cook at $30.00 per month and board for the two; Arthur Lightfoot, to Dr. Robt. Stephens, Jefferson county, as a farm hand at $18.00 per month and board. The following men to Ahrens & Ott, Louisville, Ky., as laborers at $1.75 per day, Oren McMonigle, wife and two children (Ind.); Jos. Haegher, wife and three children, Geo. Hendel, wife and two children (Germany); Mike Muldovan, wife and child (Germany); Frank Gerterke, wife and two children (Germany); Floyd Cart, wife and child, Frank Feeney (S.); Sam Breiner and wife (N. Y.); Jesse Porter, Earl Eaglin, Rudolph Blaetter and wife (Switzerland); Walter Joyce (Ind.); E. Long and wife and two children (Ind.); O. A. Johnston, wife and five children (Ill.); Neal McMonigle, wife and child (Ind.); Ben T. Quin, wife and four children, father to Mrs. A. Craig, Pewee, Ky., as a gardener at $25.00 per month, house and garden; Elzie Eurton and wife (Ind.); to I. C. R. R. Co., at $45.00 per month; J. T. Long, to Marine Hospital, Louisville, Ky., laborer at $20.00 per month and board; Chas. Jenkins to P. C. Caummisar, Louisville, Ky., as a teamster, at $8.00 per week.

Total sent out, seventy-two. Immigrants, forty-two.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

JUNE, 1910.

Louisville, Ky., July 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of June I sent out the following persons: Charles Jenkins and wife and A. A. Smith, wife and mother (Ohio); to D. R. Stephens, Jefferson county, as farm hands at $20.00 per month and board; John Miller and wife to Ed Cook, Cecilia, Ky., as a farm hand at $18.00 per month and board; Gottfried Gauglhofer, wife and two children (Germany); to J. E. Madden, Lexington, Ky., as a farm hand at $20.00 per month and board; Kirby Finch, wife and child (Ind.); to H. C. Bedinger, Anchorage, as a farm hand at $20.00 per month and board. The following to the Standard Sanitary Manufacturing Co., Louisville, as laborers in factory at $1.75 per

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day, James Nail and wife (Ind.); Glandor Yarbrough, wife and child, Ind.; Carl Smith, wife and two children (Ind.) Wm. Nala, wife and child (Ind.); Gus Smith, wife and child (Ind.); Pete Strange, wife and five children and Wm. Hazelip and wife, to the Kosmo Cement Co., Kosmodale, Ky., Ernest Grosman and wife (Ind.) and Thos. Sullivan, wife and two children (Ind.) as laborers at $2.00 per day; Frank King, wife and sister (Germany); to Independent Pole and Shaft Co., Louisville as a blacksmith at $2.00 per day; to K. & I. Bridge Co., Louisville, as laborers at $1.75 per day, Earl Eglin, W. M. Kilpatrick, wife and child (Ala.); A. G. Smith, wife and two children (Ind.); H. N. Smith, wife and mother (Ill.); Wm. Kailer and wife (Germany); to Ahrens & Ott, as laborer at $1.75 per day.

Total sent out, sixty. Number of immigrants, forty-six.

I also have application from the Consolidated Mining Co., for one hundred and fifteen men and from the Standard Mfg. Co. for one hundred men, and being unable to get them here have sent the applications to the Government offices for the help.

Respectfully submitted,
E. J. GREEN,
State Immigration Clerk.

JULY, 1910.

Louisville, Ky., August 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—During the month of July, 1910, I sent out the following persons: George Fry, wife and three children (Fla.); to P. Bannon Sewer Pipe Co., Louisville as a laborer at $1.50 per day; Virgil Gammel, wife and child, and Everett Reed, wife and child (Ind.); to R. Stevens, Jefferson County as farm hands at $20.00 per month; James Sweet, (O.); Chas. Slusser, (O.); John Geyer, (O.); James Ross, (N. Car.); and W. E. Wagner, (Penn.); to J. E. Madden, Lexington, Ky.; as farm hands at $20.00 per month and board; J. R. Harrod and wife and T. W. Wisdom to H. C. Bedinger, Anchorage; as farm hands at $20.00 per month and board; the following to Ahrens & Ott, Louisville; as laborers at $1.50 per day, Joe Grimme, wife and child, Thomas McGarahan, wife and three children, George Athon,

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wife and three children, Walter B. Powers, wife and child, (Ala.); and August Nelson, wife and child. The following to the K. & I. Bridge Co., as laborers at $1.50 per day, Gus Smith, wife and two children, (Ind.); O. A. Johnson, wife and five children, (Ill.); Levi Brown and wife, T. W. Garan, wife and two children, (Ind.); John Carter and mother: the following to the P. Bannon Sewer Pipe Co., Louisville, as laborers at $1.75 per day, A. M. Julian, wife and two children (Ind.); Walter Joyce, wife and child; Ottis Robertson, wife and child.

Total sent out, 66; number of immigrants, 34.

Respectfully submitted,

E. J. GREEN,
State Immigration Clerk.

AUGUST, 1910.

Louisville, Ky., Sept. 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir: I respectfully report that during the month of August, 1910, I sent out the following persons: Nick Neamutter, (Austrian); to F. J. Iacher, Jefferson County, as a farm hand at $18.00 per month and board: The following to Ahrens & Ott, Louisville, Ky., as laborers at $1.75 per day, Wm. Abraham, wife and child, (Syrian); Jacon Schamner, wife and child, (Syrian); Geo. Schander, wife and child, (Syrian); John McKinley, (Tenn.); R. J. LeStrange, (Penn.); the following to P. Bannon Sewer Pipe Co., of Louisville, as laborers at $1.75 per day; Albert F. Gray and wife (Tex.); W. D. Powers and wife; Alex Tomas, wife and child (Syrian); Jacob Tomas, wife and child, (Syrian); Frank Sweeney, Chas. Wells, wife and child, Chas. Gunther, wife and child, Chas. Deetch, wife and child, Chester, wife and three children; Hugh Whalen and wife (Ind.); and Irwin Balmer, wife and two children (Ill.) The following to K. & I. Bridge Co., Louisville, Ky., as laborers at $1.75 per day, James Loman and wife (Ind.); Andrew Barth, wife and child, Ernest Grossman, Tom Welsh, John Thomas, wife and child (Austria); Alex. Thomas, wife and child (Austria); Jacob Thomas, wife and child (Austria); Clifton Ehrman and Wm. Wheat (Ga.) The following to John E. Madden, Lexington, Ky., as farm hands at $20.00 per month and

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board, Chas. Stone, Ed. Kraig, Fred Hill, Geo. Gesman and Chas. Edwards; Jos. Koenig (Germany); and Stephen Youngsberry, wife and two children (Germany); to Independent Pole and Shaft Co., Louisville, at $2.50 per day.

Number sent out, seventy. Number of immigrants, forty.

Respectfully submitted,
E. J. GREEN,
State Immigration Clerk.

SEPTEMBER, 1910.

Louisville, Ky., October 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of September, 1910, I sent out the following persons: Nicolaj Kislowski, wife and child (Russia); Trafan Splonde, wife and child (Russia); Jan Boczek, wife and child (Poland); Piotr Melynczd, wife and child and Franciszek Szczerba, wife and two children (Poland); to the Standard Sanitary Manufacturing Co., Louisville, as machinists at $3.00 per day; William Miller, wife and six children to O. S. Kline, Anchorage, as farm hand at $22.50 per month and house rent; Archie Bolden, wife and three children, to Louisville, Ky., as laborer at $1.60 per day; Lon Colbert and wife (Tenn.); and Wm. Lewis, wife and two children, to P. Bannon Sewer Pipe Co., Louisville, as laborers at $1.50 per day; Wm. Thompson (Tenn.); and Stephen Youngsberry, wife and child (Germany); to F. J. Eicher, Jefferson county, as farm hands at $20.00 per month and board; Mike Griffin to C. W. Hesson, Leitchfield, Ky., as a farm hand at $16.00 per month and board; Jacob Gruweling to J. E. Madden, Lexington, as a farm hand at $20.00 per month and board; Sam Pate and wife to M. Ruttlidge, Louisville, at $25.00 per month and board for the two; Martin Kaelin, to W. P. Grigsby, Louisville, to work at country place, at $3.00 per week and board; Sam Adams, wife and two children, to J. B. Wathen, Lebanon, as farm hand at $22.50 per month and house rent; J. F. Dill, wife and two children (Ill.); and Hugh Whalen and wife (Ill.); to Mr. Nelson, Vine Grove, at $20.00 per month and house rent, as farm hands. The following

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to P. Bannon Sewer Pipe Co., Louisville, as laborers at $1.75 per day, P. McMahon and wife (Ohio); L. E. Bailey, Fredrick Woodward (Ohio); Joe Davis (Ohio); Frank Klein, wife and five children; W. C. Banks, wife and child, and Martin Hornick, wife and six children (Germany.) The following to the Louisville Brick Co., Louisville, as laborers at $1.60 per day, George Schmidt, wife and child; John Burgess and John Walters.

Total, eighty-two. Number of immigrants, thirty-nine.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

OCTOBER, 1910.

Louisville, Ky., November 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of October, I sent out the following persons: Lon Colbert, wife and child (Tenn.); to Louisville Brick Co., as a laborer at $1.60 per day; Rhusow Taylor and mother, and John Ewing, to Willard Hotel as porters at $4.00 per week; James Schmit and wife (Germany); Harry Schmit (Germany); David Titus (N. Y.); and Carroll Terrell (Tenn.); to J. E. Madden, Lexington, as farm hands at $29.99 per month and board; Leamon Bailey to H. E. Bedinger, Anchorage, as a farm hand at $18.00 per month and board;W. O. Davis and wife to Sales Furniture Co., Louisville, Ky., as a driver at $7.00 per week; Hugh Whalen and wife (Ill.); Ed Feeney and wife (Ind.); and Frank Dill, wife and two children (Ill.); to Myer, Bridges Co., Louisville, as porters at $8.00 per week. The following to Ahrens & Ott, Louisville, as laborers at $1.50 per day; J. C. Harrell, wife and child; J. G. Cairnes, wife and two children; Frank Klein, wife and six children (Ind.); Lee Haggard, wife and three children, also to the same firm as machinists at $2.50 per day; W. D. Powers, wife and child (Ind.); Emil Freiss and wife (Germany); and C. J. Tripp and wife (Ohio); to the Louisville Brick Co., as laborers at $1.60 per day; Geo. Escher, wife and child (Wis.); John Walters and wife; Walter Price and wife; Odell Spencer, wife and two children (Ind.); and Vallas Dooley, wife and two children (Ind.); Watkins Cain and mother; and John Nolan, wife and mother, to Myer, Bridges

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Co., as laborers at $1.50 per day; Geo. F. Stoll, wife and three children (Germany); to G. Bittner & Sons, Louisville, as a machinist at $2.50 per day.

Total sent out, seventy-five. Number immigrants, forty-six.

Respectfully submitted,

E. J. GREEN,
State Immigration Clerk.

NOVEMBER, 1910.

Louisville, Ky., Dec. 1, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of November, 1910, I sent out the following persons: Carl Smith and wife (Germany); and Wm. Huffman and wife (Penn.); to Henry Bickel, Louisville, Ky., as laborer at $2.00 per day; Geo. Johnson and wife, to P. Bannon, Louisville, Ky., as a laborer at $1.75 per day; Alice Johnston, husband and child, to City Hospital, Louisville, Ky., as scrub woman at $12.00 per month and meals; Nick Neiamti (Austria); to J. S. Maddox, Turner's Station, Ky., as a farm hand at $19.00 per month and board. To the Louisville Gas Co., Louisville, Ky., the following men as laborers at $1.75 per day, Hugh Whalen and wife; Frank Dill and wife and two children; Paul Mueller and wife (Wash.); Robt. Morgan and wife (New Jersey); Fred Steinbrook and wife and child; Louis Ash and wife (Penn.); Robt. Smith and wife; James O'Neil and wife (Penn.); Thomas Hendricks; Karl Schmidt (Germany); Albert Huffman (N. Y.); T. F. Younger, wife and child (Ind.); to Louisville Hotel, Louisville, Ky., as a dishwasher at $20.00 per month and meals; Ed. Riley (Mich.); to Hardesty's Restaurant, Louisville, as dishwasher at $3.00 per week and board; to Otto Plumbing Co., Louisville, Ky., as laborers at $2.00 per day, the following men, James Herrmann and wife (Mo.); E. H. Hawley, wife and two children (Dakota); Harry Staten and mother (Ind.); and Harry Parker and wife; F. Smith and wife to City Hospital, Louisville, Ky., as orderly at $30.00 per month and board; Gus Eberlin, wife and child to Bickel Contracting Co., as a laborer at $2.00 per day; E. P. Walthal (Ohio); to Ahrens & Ott, Louisville, Ky., as a laborer, at $1.75 per day; Grover C. Huffman and wife (Mo.); Willard Hotel, Louisville, Ky., as cloak-room keeper, at $4.00

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per week and meals; W. O. Russell, wife and five children, to Ahrens & Ott, Louisville, Ky., as a laborer at $1.75 per day; Leon Corbett and wife, to P. Bannon, Louisville, Ky., as a laborer at $1.75 per day.

Total sent out, sixty-three. Immigrants, thirty.

Respectfully submitted,

E. J. GREEN,
State Immigration Clerk.

DECEMBER, 1910.

Louisville, Ky., December 31, 1910.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of December, 1910, I sent out the following persons: Henry Jones and wife (Minn.); to H. G. Busig, Jefferson county as a farm hand at $20.00 per month and board; Wm. C. Thompson and wife to Guy Finley and Jack Slaughter and wife (Ohio); to Guy Finley, Jefferson county, as dairy hands at $20.00 per month; Wm. Willis and wife (Ind.); to H. J. Lewis, Jefferson county at $25.00 per month and board; Elzie Eurton and wife (Ind.); to Myer, Bridges Co., Louisville, as a laborer at $8.00 per week; Geo. Railley (N. Y.); to Williams Messenger Co., Louisville, $7.00 per week; Tom McNicholls wife and two children (Ky.); Wm. Thompson and wife (Mich.); Joe Herrmann and wife (La.); and L. McHenry and wife (Mo.); to Ahrens & Ott, Louisville, Ky., as laborers, at $1.75 per day; Chester Snyder and Harry Smith to Williams Messenger Co., Louisville, Ky., at $7.00 per week; Ed. Duncan to Louisville Hotel at $9.00 per week. The following to the Louisville Gas Co., as laborers at $1.75 per day, Taylor Cashman and wife; R. S. Smith and wife; Taylor Johnson and wife; Robt. O'Brien, wife and five children; John Stucker and wife; Ed. Schultz and wife (Penn.); Frank Koehnick, wife and seven children (Germany); John Meyer and wife (Germany); Robt. Wynes and wife (Ohio); Frank Young and wife (Ind.); Geo. Gembrel and wife (N. Y.); Francis Nichol and wife (N. Y.); and Mat Smith (N. Y.)

Total sent out, sixty-one. Number immigrants, thirty-seven.

Respectfuly submitted,

E. J. GREEN,
State Immigration Clerk.

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JANUARY, 1911.

Louisville, Ky., Feb. 1, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of January, 1911, I sent out the following people: Columbus Smith and wife, to P. Bannon Co., Louisville, Ky., as a laborer at $1.50 per day; Mary Clark and child, to S. W. Shelton, Louisville, Ky., as a domestic at $4.00 per week and board; Fritz Hannarmann, wife and child (Germany); to T. F. Reynolds, Cynthiana, Ky., as a farm hand at $20.00 per month and board; John Keahler, wife and four children (Germany); to Joe Bissig, Jefferson county, as a dairyman at $30.00 per month and house; B. O. Flood and four children, to Marine Hospital, Louisville, Ky., at $30.00 per month and board; T. M. Blackmore to Fred Gernert, Louisville, Ky., hand on country place, $20.00 per month and board; Grover C. Hoffman and wife (Mo.); to H. C. Bedinger, Anchorage, Ky., as a farm hand at $20.00 per month and board. The following to the Louisville Gas Co., as laborers at $1.50 per day; John Allen, wife and child (Ohio); Martin Cartmetz, wife and child; G. Stoll, wife and three children; W. C. Thompson and wife; Ed. Cambren and wife; W. H. Smith, wife and three children; Cage Dougherty and wife; Aug. Wolf (Germany); Herman Heinzer (Germany); the following to the St. Bernard Coal Co., as laborers at $1.50 per day; Ed. Bass, wife and three children; Henry Stickel, wife and child; Larkin Presley and wife; John Bullock, wife and three children (Ohio); Chas. Yeager, wife and four children, to Frank Weber, Louisville, as a blacksmith, at $2.00 per day; Wm. Schaefer, wife and three children (Ind.); to Granger Man'fg. Co., as a laborer at $1.75 per day; Chas. Eichmeier and wife, to Independent Pole and Shaft Co., as a blacksmith at $2.00 per day.

Total sent out, seventy-three. Number of immigrants, twenty-five.

Respectfully submitted,
E. J. Green,
State Immigration Clerk.

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FEBRUARY, 1911.

Louisville, Ky., March 1, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of February, 1911, I sent out the following persons: Mrs. Bertha Wells, husband and child, and Mary Harold, husband and child, and Mrs. Louis Treeb and child, to Louisville Hotel as chamber-maids, at $8.00 per week; John Bullock, wife and four children (Ohio); to Guy Fenley, Jefferson county, as dairy hand at $30.00 per month and house rent; W. J. Askens, wife and four children (Ohio); and John Fox, wife and three children, to Guy Fenley, Jefferson county, as farm hand at $25.00 per month and house rent; John Newman, wife and two children (Germany); to Thos. Cochran, Bardstown, as farmer on shares; J. Herrmann and wife (Mo.); and Michael Brachtem and wife (N. J.); to A. G. Eisenmenger, Jefferson county, as dairy hands at $20.00 per month and board; Chas. Winn and wife (Ky.); to Edward Cook, Cecelia, Ky., as a farm hand at $20.00 per month and board; Wm. Wingate, wife and two children, to Wm. Tingsley Co., Louisville, as a blacksmith, at $2.00 per day; A. L. Stein, wife and child (Ohio); to Alms House, Jefferson county, as a cook, at $40.00 per month and board.

Total sent out, forty. Immigrants, twenty-three.

Respectfully submitted,
E. J. Green,
State Immigration Clerk.

MARCH, 1911.

Louisville, Ky., April 1, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of March, 1911, I sent out the following persons: Joe Johnson, wife and two children to P. Bannon Co., Louisville, Ky., as a laborer, at $1.75 per day; Mrs. A. L. Treeb and husband (Germany); to Louisville Hotel, as housemaid, at $9.00 per week and meals; Tom Finn, wife and three children, to W. B. Wathen, Lebanon, Kentucky, as a farm hand at $25.00 per month, house, garden and fuel; H. F. Peoples, wife and

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child (Texas); to W. B. Wathen, Lebanon, Ky., as a farm hand at $25.00 per month, house, garden and fuel; Edward Cambron, wife and child, to Hugh Finely, Jefferson county, as a dairyman at $30.00 per month, house and garden; J. L. Cannady, wife and four children, to J. H. Hardin, Anchorage, Ky., as a farm hand, at $25.00 per month, house, garden and fuel; Clyde Cook, wife and three children (Ind.); to Hugh Finely, Jefferson county, Ky., as a farm hand, house, garden and fuel; Albert Kesselring, wife and two children (Ind.); to Ahrens & Ott, Louisville, Ky., as a laborer, at $1.25 per day; Larkin Pressley, wife and child (Ind.); and John Bullock, wife and four children (Ohio); and John Yager, wife and four children, to St. Bernard Coal Company, Louisville, Ky., as laborers at $1.75 per day; T. L. Duffy, wife and five children (Ind.); to Ben Ott, Louisville, Ky., as laborer at $1.50 per day.

Total sent out, fifty-four. Immigrants, twenty-eight.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

APRIL, 1911.

Louisville, Ky., May 1, 1911.

Hon. M. C. Rankin, Chairman,

Frankfort, Ky.

Sir:—I respectfully report that during the month of April, 1911, I sent out the following persons: J. M. Sanders, wife and three children, to Walter Erman, Louisville, Ky., as a laborer, at $1.50 per day; Frank Dill, wife and three children, to B. F. Avery & Sons, Louisville, Ky., as a laborer, at $1.75 per day; Julius Moore and wife, Col. (Ill.); to Beechhurst Sanitarium, Louisville, Ky., as servants, at $5.00 per week, each, and board; Mrs. Anna Hodson and child (Ind.); to Anton Kutzleb, Louisville, Ky., as housekeeper, at $2.50 per week and board; Virginia Wolfe (Ind.); to Louisville Hotel, as a housemaid, at $15.00 per month and board; Alonzo Allen, to H. C. Bedinger, Anchorage, Ky., as a farm hand at $18.00 per month and board; Richard K. Keller (Penn.); to A. M. Edwards, Walton, Ky., to work around place at $15.00 per month and board; J. M. Sanders, wife and four children, to Southern Yards, Louisville, as laborer, at $1.50 per day; Harry A. Baker and wife (Ind.); to H. C. Bedinger,

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Anchorage, as farm hand at $18.00 per month and board; Nick Molain (Hungarian); to Ed. Cook, Cecelia, Ky., as a farm hand at $20.00 per month and board; Wm. Atwill, wife and three children, and Clarence Downey, wife and child, to Ahrens & Ott, Louisville, as laborers at $1.75 per day; Martin Walker to H. C. Bedinger, as a farm hand at $18.00 per month and board; F. A. Polsley, wife and four children (Tenn.); to Struck & Co., Louisville, as a laborer at $1.75 per day; Robt. Adams and wife to Frey Planing Mill Co., Louisville, as a laborer at $1.50 per day; Ed. Cambron, wife and child, to E. J. Morgan, Shelbyville, Ky., as a farm hand at $20.00 per month, house, garden and fuel; Virgle Hampton (Ind.); to Kentucky Dairy Lunch, Louisville, Ky., at $5.00 per week and meals; Larue Morris, wife and three children to Hugh Fenley, Jefferson county, as a farm hand at $25.00 per month house, garden and fuel; J. Kelley, wife and three children, to B. H. Farnsley, Jefferson county, as a farm hand at $26.00 per month, house, garden and fuel; T. W. Marr, wife and three children (Ind.); to Hugh Fenley, Jefferson county, as a dairy hand at $30.00 per month, house and garden; John McHale, to F. J. Eicher, Jefferson county, as a farm hand at $20.00 per month and board; Jos. Haeher, wife and seven children, to Beckworth Organ Co., Louisville, as machinist, at $2.00 per day.

Total sent out, seventy-two. Number of immigrants, twenty.

Respectfully submitted,
E. J. Green,
State Immigration Clerk.

MAY, 1911.

Louisville, Ky., May 31, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of May, 1911, I sent out the following persons: J. A. Martin, wife and child, to Central Concrete Construction Co., Louisville, Ky., as a laborer at $1.75 per day. The following to B. F. Avery & Sons, Louisville, Ky., as laborers at $1.75 per day, John Bullock, wife and three children (Ohio): J. A. Crombie (Ohio); and F. H. Sager (Ohio); John Mathews (Ohio); to A. G. Eisenmenger, Jefferson county, as a farm

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hand at $20.00 per month and board; Jos. Haeher, wife and seven children, to Central Concrete Construction Co., Louisville, as a laborer at $1.75 per day; John Newman and wife, to O. S. Kline, Jefferson county, as a farm hand at $25.00 per month and house; Joe Mills (Austria); to Mr. Westfall, Jefferson county, as a farm hand at $20.00 per month and board; Eva Vasija (Austria); wife and three children, to Frank J. Eicher, Jefferson county, as a farm hand at $20.00 per month and board; Victor Bron and wife, to Old Inn, Louisville, as cloak room keeper at $5.00 per week, room and board; Mathew J. Wren (Mo.); to Mr. Westfall, Jefferson county, as a farm hand at $20.00 per month and board; Clarence Kingery, wife and two children, to F. A. Farnsley, Jefferson county, as a farm hand at $25.00 per month and house. The following to the Louisville Gas Co., as laborers at $1.75 per day, Clarence Heuberger, wife and child; Sam Grant and wife and D. J. Kennedy and wife. The following to the K. & I. Bridge Co., as laborers at $1.50 per day, Wm. Phillips (Ind.); O. M. Huff (Miss.); James Sleet, and J. E. Weaver and child (Fla.); Alex. J. Zielminski and wife (Ill.); to Henry Bedinger, Anchorage, as a farm hand at $18.00 per month and board; James L. Tannehill and wife, to Jessup & Antrim, Louisville, as a driver, at $11.00 per week; James Mars, wife and four children, to Mr. Kline, Jefferson county, as a farm hand at $25.00 per month and house; Hallie Hathaway, to Willard Hotel, as chambermaid at $14.00 per month and board; Mabel Teague and child, to Victoria Hotel, as a chamber maid at $14.00 per month and board; Walter Grimm (Okla.); Alfred Grimm (Okla.); and T. W. Marr, wife and two children (Ind.); to Avery & Sons, as laborers, at $1.75 per day.

Total sent out, sixty-four. Immigrants, twenty-six.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

JUNE, 1911.

Louisville, Ky., June 30, 1911.

Hon. M. C. Rankin, Chairman,

Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of June, I sent out the following persons: to the Kentucky &

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Indiana Terminal Co., Louisville, the following as laborers at $1.50 per day, E. A. Kemp, August Eberling, wife and child; S. P. Conroy, Bland Barrackman; Lyman Elliot and wife (Ind.); J. W. Smith, wife and child; E. H. Hansbery and mother; W. E. Ford, wife and child; Otis Thyson, Oscar Thyson, Lester Smith (Tenn.); to Mr. Flynn, Louisville, as a dairyman at $18.00 per month and board; Shell Handlon, to A. E. Willson, Frankfort, as a gardener at $30.00 per month and board; E. J. Blanks, wife and child; also Henry Sanders, wife and three children, and Dan Gollerday, wife and five children, to Henry Gallwein, Jefferson county, as farm hands at $25.00 per month and house; also H. H. Brown, wife and child, to Henry Gallwein, as a farm hand at same price; John Meredith and wife, to M. E. Kline, as a farm hand at $25.00 per month and house; Frank Roeske, to W. C. Minsenmeier, Louisville, as a blacksmith, at $2.00 per day; Hubert Head, to Parker Electric Co., Louisville, as a laborer, at $1.75 per day; Raymond Tucker and wife (Mo.); to O. S. Kline, Jefferson county, as a farm hand at $25.00 per month and house. The following to B. F. Avery & Sons, Louisville, as laborers, at $1.75 per day. Marvin Bogard, wife and child; Arthur Wise, J. E. Weaver, wife and child (Fla.); Neal McMulligan, wife and child (Ind.); Wm. Lemond and wife (Ind.); John Neuman and wife; Fred Becker and child; Pat Stewart, wife and three children (Ind.); Leon Vezolles, wife and four children (Ill.); D. W. Donahue, wife and six children; and W. C. Gillett (Ohio); to Jas. Clark, Jr., Elec. Co., Louisville, as laborers, at $1.75 per day; Ed. Thomas (Tenn.); and O. M. Huff (Ind.); to A. G. Eisenmenger, Jefferson county, as gardeners, at $20.00 per month and board; Harry S. Dunham (Ind.); and James Sweet, to H. C. Bedinger, Anchorage, as farm hands, at $18.00 per month and board; Wm. Lee, wife and five children to Ed. Morgan, Shelbyville, as a farm hand, at $20.00 per month, house and fuel; Jesse Miles, wife and child, to O. S. K. Kline, Jefferson county, as a farm hand at $25.00 per month and house; Elizabeth Leary to Willard Hotel, Louisville, as a maid at $14.00 per month and board.

Total sent out, ninety-five. Immigrants, twenty-seven.

Respectfully submitted,

E. J. GREEN,

State Immigration Clerk.

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JULY, 1911.

Louisville, Ky., Aug. 1, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of July, 1911, I sent out the following persons: John Jude, (S.); to Rev. Everett Bedinger, Anchorage, as a farm hand, at $18.00 per month and board; J. C. Tilford, wife and two children to Hugh Fenley, Jefferson county, as a dairyman at $30.00 per month and house rent; J. J. Grimm, wife and two children (Tenn.); to O. C. Gleichman, Jefferson county, as a farm hand at $25.00 per month and house; C. A. Higgins and wife (Maryland); to W. H. Newman, Jefferson county, as a farm hand, at $25.00 per month and house rent. The following to B. F. Avery & Sons, as laborers, at $1.75 per day, Ed. Howard, Frank Dill, wife and two children (Ill.); Grover Wagenart, wife and two children (Ind.) The following to Ahrens & Ott, as laborers, at $1.75 per day, Lee Tannehill, mother and sister; R. W. Duncan, wife and child; A. H. Pine and child (Okla.); Rube Harland, wife and child; J. D. Simpson and wife; Paul Wabnitz, father and sister; Wm. Gibson, wife and three children (Tenn.); Raymond Tucker, wife and brother; James Gibson, wife and four children (Tenn.); and Wm. Goode, S. B. Scofield, wife and three children to L. & E. Ry., as watchman at $12.00 per week; W. D. Powers and wife, to B. H. Farnsley, Jefferson County, as a farm hand at $30.00 per month and house rent; E. Van Fossan (Ohio); to Henry Bedinger, Anchorage, as a farm hand at $18.00 per month and board; Wm. Egland and wife, to O. P. Morton, Warsaw, Ky., as farm hand, at $20.00 per month and board; Tom Wilson (Ind.); to W. H. Johnson, as farm hand at $18.00 and board.

Total sent out, sixty-three. Immigrants, twenty-nine.

Respectfully submitted,
E. J. Green,
State Immigration Clerk.

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AUGUST, 1911.

Louisville, Ky., September 1, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Sir:—I respectfully report that during the month of August, 1911, I sent out the following people:

J. W. Dixon, Oklahoma, to Guy Fenley, Jefferson Co., as a dairyman at $25.00 per month and board; W. O. Adamson, wife and child, and John McCord, wife, 3 children, Indiana, to B. F. Avery & Sons, as laborers, at $1.75 per day; John Schneeberg, Florida, to W. H. Johnson, Jefferson Co., as a farm hand, at $17.00 per month and board; Gus. Millinger and wife, Indiana, to Geo. C. Bird, Oldham County, as a farm hand, at $30.00 per month, house, garden and fuel; the following to Ahrens & Ott, Louisville, Ky., as laborers, at $1.75 per day, W. M. Brown, wife, 3 children, Michigan, Edward Johnson, wife and eight children, California, Wm. Egland, wife, Arthur Place, mother and sister, C. D. North, wife, 2 children, Ohio; Luther Kirkland, Ohio, to Geo. B. Moock, Campbell County, as a dairyman, at $25.00 per month and board, C. H. Goodwin, wife, to American Bridge Co., Louisville, as a laborer, at $1.75 per day, Tom Wilson to H. VanAntwerp, Rowan County, as a farm hand, at $25.00 per month and board; John Miller, Indiana, to W. H. Johnson, Jefferson County, as a farm hand, at $17.00 per month and board; G. M. Meers, wife, and four children, Missouri, to H. VanAntwerp, Rowan County, as farm hands, the father and son to receive $35.00 per month each, and house, garden and fuel; Thos. Lawson, wife, child, and Thos. Pucket, wife, child, to Guy Fenley, Jefferson County, as dairymen, at $25.00 per month and house; Jack Clayton, wife, 2 children, and L. Presley to Guy Fenley, as laborer, at $1.00 per day and board; Wm. Winn, Indiana, to J. H. Fullenwider, Shelby County, as a farm hand, at $17.00 per month and board; Clarence Dukes, wife, child, Ohio, to W. H. Kline, Jefferson County, as a farm hand, at $25.00 per month and house. Total 63. Immigrants, 40.

Respectfully submitted,
E. J. Green,
State Immigration Clerk.

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SEPTEMBER, 1911.

Louisville, Ky., October 2d, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of September, 1911, I sent out the following people:

The following to B. F. Avery & Sons as laborers and machine assistants, at $11.00 per week, Frank Leo, wife, Syria; Sam Farris, wife, Syria; Mike George, wife, child, Syria; S. H. Thornsberry, wife, 5 children; F. G. Smith, wife, Canada; J. Hoffman, mother, child, New York; Arthur Kent, wife, child, New York; Thos. West, wife, 3 children; H. A. Smith, wife, 5 children, Indiana; G. T. Phelps; D. C. Fisk, Ind.; Chas. Boes, wife and child; N. S. Bewley, wife, 2 children; John H. Hoffman, wife, 5 children, Ohio; J. M. Haley, Ohio; Wm. Lewellen, wife, child, Ohio; Lee Tannehill, mother, sister: Geo. S. Markwell, wife, 3 children; Wm. Wills, wife; Alex. Probus; Mike Elias, wife, 2 children, Syria; the following to Koppman & Early, Louisville, as laborers at $1.75 per day, T. E. Cooper, wife, Oklahoma; Wm. Willis, wife, Indiana; Nathan L. Lavelle, wife; Geo. Hayes, wife; E. VanFossa, wife, Ohio, to E. W. Bedinger, Oldham County, as a farm hand, wife to cook, at $25.00 per month and board; Arthur Smith, wife, child, Oklahoma, to Ahrens & Ott, as a laborer, at $1.75 per day; Geo. J. Rowland, wife, 3 children, to Mr. Shellcross, Shelbyville, as a dairy hand, at $35.00 per month and house rent; T. M. Smoot, wife, Texas, to J. H. Fullenwider, Shelbyville, as a farm hand, at $20.00 per month and board; Mrs. Mary Egland, husband, to Willard Hotel, as chambermaid, at $14.00 per month, and meals; Alberta Tarver, Hus., to Dr. Woody, Louisville, as housemaid, at $3.00 per week and board. Total sent out, 93. Immigrants, 48.

Respectfully submitted,

E. J. Green,
State Immigration Clerk.

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OCTOBER, 1911.

Louisville, Ky., November 1st, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of October, 1911, I sent out the following people:

To B. F. Avery & Sons, Louisville, as laborers at $1.75 per day, the following—A. M. Kesler, Florida; S. Dillinger, Indiana; E. D. Bennett, wife, Indiana; F. A. Fowler, wife and child, Maryland; C. E. Arnold, wife, 4 children; J. U. Shell, wife, child, Tennessee; G. Stoll, wife, 3 children; Robert Maddox, wife, child; C. C. Brown, wife, child; Jas. Dewey, wife and 2 children, Indiana; Hugh Whalen, wife, child; Wilford Denton, wife, child. Peter Frees, Indiana, to G. C. Bird, Shelby County, as a farm hand at $18.00 per month and board; Larkin Presley, wife and child, to Victor Hagman, Meade County, as a farm hand, at $20.00 per month and house rent; Wm. Holscraw, Roy Fife and H. B. Ropke, wife, child, to the Louisville Pillow Co., as laborers, at $10.00 per week; D. A. Stoll, wife, 4 children, to R. H. Hughes, as Agent on Commission; C. E. Scroggins, to Louisville Pillow Co., as a laborer, at $10.00 per week; J. S. Reynolds, wife and J. H. Dunn, wife, 3 children, Indiana, to Willard Hotel, as cloak room keepers, at $15.00 and meals; Alex. Probst, wife, to Tom Cornell, Jefferson County, as a laborer at $1.25 per day; W. E. Holland, wife, child, Indiana, to Willard Hotel, as a porter, at $4.00 per week and tips; Ed. Brown, wife, to Tom Cornell, as a laborer, at $1.25 per day; Bridgie Creason, 3 children, to Mrs. Becht, Louisville, as a cook, at $4.00 per week and board; Viola Johnson, to Mrs. Johnson, Louisville, as nurse, at $5.00 per week and board; Mamie Willis, to Mrs. Fisher, Louisville, as a cook, at $4.00 per week and board. Total, 73. Immigrants, 23.

Respectfully submitted,

E. J. Green,
State Immigration Clerk.

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NOVEMBER, 1911.

Louisville, Ky., December 1st, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:—I respectfully report that during the month of November, 1911, I sent out the following people:

A. C. Garrett, Ohio, to A. H. Johnson, Jefferson County, as a farm hand, at $17.00 per month and board; John D. Stagg, wife, child to Ahrens & Ott, as a machinist, at $2.50 per day; Nich Miller, wife, child, New York, to B. F. Avery & Sons, as a laborer, at $1.75 per day; C. E. Arnold, wife, 4 children, to J. Deitzman, Jefferson County, as a farm hand at $20.00 per month and house rent; J. S. Reynolds and P. J. Mesmer, wife, 2 children, to Willard Hotel as cloak room keeper, at $12.00 per month and board; W. A. Snith, wife, to Willard Hotel as a laborer, at $1.50 per day. The following to Roppleman & Eady, Louisville, as laborers, at $1.75 per day, J. E. Stockdale, wife, 3 children; Robt. Cole, wife, child; Nick Neamtu, Austria; Chas. Brigham, wife, Indiana; Edward Greves; Wm. Carr, wife, child; John Nale, Alabama; John Butt, Michigan; John Dort, wife, child, Austria; and John Mack, wife, child. David L. Brown, mother, Indiana, to H. Johnson, Jefferson County, as a farm hand at $17.00 per month and board; F. A. Sabins, wife, child, Indiana, to B. F. Avery & Sons, as a fireman, at $2.50 per day; James Rateau, sister, to Auto Parcel Co., Louisville, as messenger, at $3.00 per week; Frank Rogers to Guy Fenley, Jefferson County, as a dairyman, at $20.00 per month and board; O. M. Huff to Mr. Johnson, Jefferson County, as a farm hand, at $16.00 per month and board; Sam Basil, wife and child, to E. Willis, Oldham County, as a farm hand, at $20.00 per month and house; W. W. Crews, wife, 3 children, to B. F. Avery & Sons, Louisville, as a laborer, at $1.75 per day; Henry Potter, Tennessee, Ruse Taylor, Joe Magee and Geo. Edmunds, wife, Ohio, to Louisville Hotel, as house men, at $6.00 per week and meals. Total, 65. Immigrants, 17.

Respectfully submitted,

E. J. Green,
State Immigration Clerk.

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REPORT FROM STATE IMMIGRATION CLERK.

Louisville, Ky., September 6, 1911.

Hon. M. C. Rankin, Chairman,
Frankfort, Ky.

Dear Sir:

I respectfully acknowledge receipt of your letter of September 1st, enclosing letter from the Chief of Division of Bureau of Information, Immigration and Naturalization Department of Commerce and Labor, Washington, D. C. I believe that it is of great interest to the State of Kentucky to have a representative present and taking part in the conference of Immigration Agents, which is suggested in said letter. This Government Department has always co-operated with, and assisted the Kentucky Department in every way that they could, and it seems to me that it is only a step in gaining a closer relation between the Government and State Departments.

The Immigration Department for Kentucky, during the year, September 1, 1910, to September 1, 1911, has done the following work:

The number of people sent out each month were as follows:

September, 1910	82
October, 1910	75
November, 1910	63
December, 1910	61
January, 1911	78
February, 1911	40
March, 1911	54
April, 1911	72
May, 1911	64
June, 1911	95
July, 1911	63
August, 1911	63
Total	810

This department is allowed $2,000 per year. The total expenses for the Department for the twelve months above stated, including salary and all expenses, was $1733.69, leaving a balance of $266.31 not used.

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To show what this work has amounted to to the people of Kentucky, I give you the following statement as to the wages earned by the people sent out for thirty days, that is the wages for thirty days of the people sent out is the amount stated as follows:

September	$1,279.00
October	1,106.50
November	1,269.50
December	1,157.00
January	940.50
February	336.00
March	470.00
April	711.00
May	1,060.50
June	1,493.00
July	940.50
August	781.00
Total	$14,504.50

This is thirty days earning for the people sent out of this office in twelve months. This means a great deal more to the people of Kentucky than it appears at a glance. Because several hundreds of these people not only received the amounts in dollars and cents as stated, but received board in addition thereto, and a great many went to farms and received house-rent, garden and fuel. In addition to that, no man employs help at a dollar a day, unless he can make himself at least a dollar, so you can figure about $14,500.00 earned for the people who employed this help, which means to the State of Kentucky over $28,000.00 on a thirty day basis. In addition we have given employment and homes to over 800 people, and assisted people who employed the help to make money and develop the State.

About 50 per cent. of the people to whom employment was given through this office were residents of the State of Kentucky, who were out of employment. The balance were from other States and Countries. And to show the extent to which this office has been advertised and reached, I give the following States and Countries from which the help was received:

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Tennessee	30
Maryland	2
Illinois	26
Indiana	100
Oklahoma	8
Ohio	55
Missouri	19
Florida	9
Mississippi	1
Pennsylvania	9
Texas	3
New Jersey	4
Minnesota	2
New York	8
Michigan	8
Louisiana	2
Washington	2
Dakota	4
Wisconsin	3
California	10
Austria	7
Hungaria	1
Russia	16
Germany	52

So you see that the work has reached all over the United States, and we are getting good people from other states who are coming to Kentucky. The United States Government is offering closer relation with the State and the State work. I think a representative should be sent to Washington for the meeting suggested in the Government letter as there is $266.00 left in the state fund for the last twelve months, and it will only cost $32 for a ticket to Washington and return, and I judge the expense at Washington will be about $5.00 per day, which I think will be cheap for the benefits derived from the closer relations with the Government work.

You remember that a year or so ago we though that we had a very close relation with the Government by having your Immigration Clerk appointed Special Agent for the Government. You remember that this had been considered by the Government Department, but was a failure because of the technicality of the Government law. If we could make this arrangement it would mean that Kentucky would get two or three times the benefit of this work which it is now receiving. I would suggest that your representative at Washington, instead of being given two days at this meeting, be given two or three days additional, and see if this technicality can't be overcome, as I firmly believe it can if we have a personal representative before the Department. I have no doubt

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that the last twelve months work will appeal to the Government, and especially in the following way. The Government started its Information Offices because the employment offices in vogue in the various cities had been imposing upon, and virtually robbing, not only the poor people who wanted employment, but those who were seeking help, and it was to stop such work that the Government started its offices.

To show how the work of this Department will appeal to the Government—the employment offices would have charged $5.00 apiece for each person sent out, and with the 810 sent out from this office you see there would be a saving of $4,500.00 to those who have gotten employment. In addition to that the employment offices charge from ten to fifteen per cent. on the amount of salary received by these people for one month, and 10 per cent. on the $14,500.00, the salary received by these people sent out from this office would be $1,450.00. This makes a saving according to the Government's standard of $5,500.00 by these people, and to the citizens of Kentucky, because in a large number of cases the person seeking help has to pay from two to five dollars to the employment agency for getting them. With such a showing to go to the Government, I believe that we can now get a real combination of the Government and State work. You can easily appreciate what this would mean to Kentucky in a few years to come, where our work at present shows on the thirty day basis over $29,000.00.

Any other information which the Board may desire, or any information which I have not included in this report, I am always glad to give.

Respectfully,

E. J. GREEN,
State Immigration Clerk.

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DEPARTMENT OF AGRICULTURE, LABOR AND STATISTICS.

M. C. RANKIN, Commissioner,
FRANKFORT, KY.

PAT FILBURN, State Labor Inspector,
2507 Magazine St., LOUISVILLE, KY.

T. R. STULTS, Ass't State Labor Inspector,
COLUMBIA, KY.

CHAPTER 66.

AN ACT to regulate Child Labor and to make the Provisions thereof effective.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

§1. No child under fourteen years of age shall be employed, permitted or suffered to work in or in connection with any factory, workshop, mine, merchantile establishment, store, business office, telegraph office, restaurant, hotel, apartment house, or in the distribution or transmission of merchandise or messages. It shall be unlawful for any person, firm or corporation to employ any child under fourteen years of age in any business or service whatever, during any part of the term during which the public schools of the district in which the child resides are in session.

§2. No child between fourteen and sixteen years of age shall be employed, permitted or suffered to work in or in connection with any factory, workshop, mine, mercantile establishment, store, business office, telegraph office, restaurant, hotel, apartment house, or in the distribution or transmission of merchandise or messages, unless the person or corporation employing him procures and keeps on file and accessible to the truant officers of the town or city, and to the Labor Inspector, an employment certificate as hereinafter prescribed, and keep two complete lists of all such children employed therein, one on file and one conspicuously posted

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near the principal entrance of the building in which such children are employed. On termination of the employment of a child so registered, and whose certificate is so filed, such certificate shall be forthwith surrendered by the employed to the child or its parent or guardian or custodian. The Labor Inspector may make demands on an employer in whose establishment a child apparently under the age of sixteen years is employed or permitted or suffered to work, and whose employment certificate is not then filed as required by this Act, that such employer shall either furnish him within ten days evidence satisfactory to him that such child is in fact over sixteen years of age, or shall cease to employ, or permit or suffer such child to work therein. The Labor Inspector may require from such employer the same evidence of age of such child as is required on the issuance of an employment certificate, and the employer furnishing such evidence shall not be required to furnish further evidence of the age of the child. In case such employer shall fail to produce and deliver to the Inspector within ten days after such demand such evidence of age herein required of him, and thereafter continue to employ such child, or permit or suffer such child to work in such establishment, proof of the giving of such notice and of such failure to produce and file such evidence shall be prima facie evidence in any prosecution brought for violation of the provision that such child is under sixteen years of age and is unlawfully employed.

§3. Employment certificates shall be issued only by the superintendent of schools or by a person authorized by him in writing, acting in his name. Where there is no local Superintendent of Schools, they shall be issued by the County Superintendent of Schools or by a person so authorized by him.

§4. The persons authorized to issue employment certificates shall not issue such certificate until he has received, examined, approved, and filed the following papers duly executed:

(1.) The school record of such child properly filled out and signed as provided hereinbelow. (2). A passport of duly attested transcript of the certificate of birth or baptism or other religious record, showing the date and place of birth of such child. A duly attested transcript of the birth

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certificate filed according to law with any officer charged with the duty of recording births, shall be sufficient evidence of the age of such child. (3). The affidavit of the parent, guardian or custodian of a child, which shall be required, however, only in case such last mentioned transcript of the certificate of birth be not produced and filed, showing the date and place of birth of such child which affidavit must be taken before the officer issuing employment certificates, who is hereby authorized and required to administer such oath, and who shall not demand or receive a fee therefor. Such employment certificate shall not be issued until such child has personally appeared before and been examined by the officer issuing the certificates and until such officer shall, after making examination, file and sign in his office a statement that the child can read and legibly write simple sentences in the English language and that in his opinion the child is fourteen years of age or upward and has reached the normal development of a child of its age, and is in sound health and is physically able to perform the work which it intends to do. In doubtful cases such physical fitness shall be determined by a medical officer of the board or department of health, or by the county physician. Every employment certificate shall be signed in the presence of the child in whose name it is issued. The Superintendent of Schools in any city, town, county, or district wherever there is one, and where there is none, then the County Superintendent, shall between the first and tenth days of each month, transmit to the office of the Labor Inspector, a report, which report shall give (1), the name of each child to whom a certificate has been issued in the previous month, together with the date of birth of such child and (2), the name of each child to whom a certificate has been refused in the previous month, together with the ground for refusal. A refusal or failure to transmit such report by any person charged under this Section with the duty of transmitting same to the Labor Inspector, shall constitute a misdemeanor punishable by a fine of not more than twenty-five nor less than five dollars, to be disposed of as provided in Section 18 of this Law.

§5. Such certificate shall state the date and place of birth of the child, and describe the color of the hair and eyes, the height and weight and any distinguishing facial marks of such child, and that the papers required by the

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preceding section have been duly examined, approved and filed and that the child named in such certificate has appeared before the officer signing the certificate and has been examined.

§6. The school record above mentioned shall be signed by the principal or chief teacher of the school which such child has last attended and shall be furnished, on demand, to a child entitled thereto. It shall contain a statement certifying that the child has regularly attended the public school or schools equivalent thereto or parochial schools for not less than one hundred days during the school year previous to his arriving at the age of fourteen years or during the pear previous to applying for such school records and is able to read and write simple sentences in the English language, and has received during such period instruction in reading, spelling, writing and geography, and is familiar with the fundamental operations of arithemtic up to and including common fractions. Such school record shall also give the age and residence of the child, as shown on the records of the school and the name of its parent, or guardian or custodian:

Provided: That upon the filing with the person authorized to issue employment certificates of the affidavit of the applicant or of his or her parent, guardian or custodian, showing that diligent effort has been made to obtain the school record hereby required and that it cannot be obtained, then the person authorized to issue the certificate may issue such certificate without having received such school record, but it shall be his duty, in such case, to examine the applicant as to his or her proficiency in each of the studies mentioned in this section; and in such case the employment certificate shall show that such examination was had in lieu of the filing of the school record.

§7. No person under the age of sixteen years shall be employed or suffered or permitted to work at any gainful occupation more than sixty hours in any one week, not more than ten hours in any one day or before the hour of seven o'clock in the morning or after the hour of seven in the evening. Every employer shall post in a conspicuous place in every room where such minors are employed a printed notice, stating the hours required of them each day of the week, the hours of commencing and stopping work and the hours when

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the time or times allowed for dinner or for other meals begin and end. The printed form of such notice shall be furnished by the State Labor Inspector, and the employment of any minor for longer time in any day so stated shall be deemed a violation of this section.

§8. Whoever employs a child under sixteen years of age, and any parent, guardian, or any adult person under whose care or control a child lives, who permits such child to be employed in violation of Section one, two, or seven of this Act, shall, for such offense, be fined not more than fifty dollars, and whoever continues to employ any child in violation of either of said Sections of this Act after being notified by a truant officer or a Labor Inspector thereof, shall for every day thereafter that such employment continues, be fined not less than five nor more than twenty dollars. A failure to produce to a truant officer or Labor Inspector any employment certificate or list required by this Act shall be prima facie evidence of the illegal employment of any person whose employment certificate is not produced, or whose name is not so listed. Any corporation or employer retaining employment certificates in violation of Section two of this Act shall be fined ten dollars. Every person authorized to sign the certificate prescribed by section five of this Act, who knowingly certifies to any materially false statement therein, shall be fined not more than fifty dollars, nor less than ten dollars.

§9. Truant officers may visit the factories, workshops, mines, and mercantile establishments in their several towns and cities and ascertain whether any minors are employed therein contrary to the provisions of this Act, and they shall report any cases of such illegal employment to the superintendent of schools and to the Labor Inspector. Labor Inspectors and truant officers may require that the employment certificates and lists provided for in this Act, of minors employed in such factories, workshop, mines or mercantile establishments, shall be produced for their inspection. Complaints for offenses under this Act shall be brought by the Labor Inspectors.

§10. No child under the age of sixteen years shall be employed at sewing belts, or to assist in sewing belts, in any capacity whatever, nor shall any child adjust any belt to any machinery; they shall not oil or assist in oiling, wiping or

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cleaning machinery; they shall not operate, or assist in operating circular or band saws, wood shapers, wood joiners, planers, sandpaper or wood polishing machinery, emery or polishing wheels used for polishing sheet metal, wood turning or boring machinery, stamping machines in sheet metal and tinware manufacturing, stamping machines in washer and nut factories, operating corrugating rolls, such as are used in roofing factories, nor shall they be employed in operating any steam boiler, steam machinery, or other steam generating apparatus, or as pin boys in any bowling alley; they shall not operate or assist in operating dough brakes, or cracker machinery of any description, wire or iron straightening machinery, nor shall they operate or assist in operating rolling mill machinery, punches or shears, washing, grinding or mixing mills or calendar rolls in rubber manufacturing, nor shall they operate or assist in operating laundry machinery, nor shall such child be employed in any capacity in preparing any composition in which dangerous or poisonous acids are used, and they shall not be employed in any capacity in the maufacture of paints, colors or white lead, nor shall they be employed in any capacity whatever in operating or assisting to operate any passenger or freight elevator, nor shall they be employed in any capacity whatever in the manufacture of goods for immoral purposes, nor in any theatre, concert hall, or place of amusement wherein intoxicating liquors are sold, nor shall females under sixteen years of age be employed in any capacity where such employment compels them to remain standing constantly. Nor shall any child under sixteen years of age be employed at any occupation dangerous or injurious to health or morals, or to lives or limbs, and as to these matters, the decision of the county physician or city health officer, as the case may be, shall be final.

§11. It shall be the duty of the owner of any manufacturing establishment, where any person under sixteen years of age is employed, his agents, superintendents, or other persons in charge of same, to furnish and supply, when practicable, or cause to be furnished and supplied to him, belt shifters or other safe mechanical contrivance for the purpose of throwing belts on or off pulleys; and, whenever practicable, machinery therein shall be provided with loose belts. All vats, pans, saws, planes, cogs, gearings, belting, set

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screws and machinery of every description therein, which is palpably dangerous, where practicable, shall be properly guarded; and no person shall remove or make ineffective any safeguard around or attached to any planer, saw, belting, shafting or other machinery, or around any vat or pan, while the same is in use, unless for the purpose of immediately making repairs thereto, and all such safeguards shall be promptly replaced. No person under eighteen years of age shall be allowed to clean machinery while in motion.

§12. Suitable and proper washrooms and water closets shall be provided in each manufacturing establishment, where any person under sixteen years of age is employed, and such water closets shall be properly screened and ventilated and be kept at all times in a clean condition; and if girls under sixteen years of age are employed in any such establishment, the water closet shall have separate approaches and be kept separate and apart from those used by men. All closets shall be kept free from obscene writing and marking. A dressing room shall be provided for such girls when the nature of their work is such as to require any change of clothing.

§13. Every person, firm, corporation, association, individual or partnership employing girls under sixteen years of age in any manufacturing, mechanical or mercantile industry, laundry, workshop, renovating works, or printing offices in this Commonwealth, shall provide seats for the use of the girls so employed, and shall permit the use of such by them when not necessarily engaged in the active duties for which they are employed.

§14. The walls and ceilings of each room in every manufacturing establishment where any person under sixteen years of age is employed shall be lime-washed or painted, when, in the opinion of the Labor Inspector, it shall be conducive to the health or cleanliness of the persons working therein.

§15. Grand juries shall have inquisitorial powers to investigate violations of this Act; also county judges and circuit judges, and judges of the Circuit Courts of the State shall specially charge the grand jury at the beginning of each term of the court to investigate violations of this Act.

§16. A copy of this Act shall be conspicuously posted and kept in each workroom of every manufacturing establish-

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ment, mill, mine or workshop of mercantile or printing establishment, theatre, bowling alley, telegraph, telephone or public messenger company or laundry in this Commonwealth.

§17. Any adult person who violates any of the provisions of this Act or who suffers or permits any child to be employed in violation of its provisions shall be deemed guilty of a misdemeanor, and on conviction, unless otherwise herein expressly provided, shall be punished by a fine of not more than fifty dollars and not less than twenty-five dollars for the first offense, and for each subsequent offense by imprisonment for not more than ninety days and not less than ten days, or by a fine of not less than fifty dollars nor more than two hundred dollars, or by both fine and imprisonment. Every fine imposed under this law shall inure to the benefit of the public schools in the city, town, county or district in which the violation may have occurred, and the Court imposing such fine shall promptly cause same to be paid over to the proper school authorities entitled to receive other moneys accruing to said schools.

§19. This act shall operate and be construed as a repeal of an Act entitled, "An Act to make it unlawful to employ a child less than fourteen years of age in workshops, mines, mills, or factories in this Commonwealth, and fixing a penalty," approved March 12, 1902, and as a repeal of an Act entitled, "An Act to amend an Act entitled 'An Act to make it unlawful to employ a child less than fourteen years of age in workshops, mines or factories,' and to regulate the employment, use and protection of child labor in mills, mines, factories, etc.," approved March 17, 1906, and all other laws and parts of laws in conflict with the provisions of this Act are hereby repealed.

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DESCRIPTION OF THE COUNTIES OF THE STATE.

ADAIR COUNTY.

Adair County is located in the south central part of the State and was formed in the year 1801 from a portion of the county of Green, and was named for General John Adair, a pioneer warrior and Statesman.

The southern portion of the county forms a watershed between the Green and the Cumberland rivers.

The following streams flow through the county, Green River, Petties Fork, Russell's Creek and Caney Fork.

Adair County is an agricultural county and has some very fertile farming lands. Corn, hay, oats, wheat and tobacco are the principal crops. Much attention is also given to the raising of stock, and especially to the raising of fine horses, as the county produces some very fine horses.

Adair County is covered with a fine growth of timber, such as oak, hickory, chestnut, poplar and the sugar maple, but has no coal to amount to anything. Fine fruit is also raised in Adair County, and much attention is given to that industry, and all the vegetables are raised that are common to this section of the country.

The population of the county is about 17,000 and the area of the county is about 500 square miles.

Columbia is the county seat and is located about twenty miles from a railroad, and is connected with the railroad by what is known as the Campbellsville pike, a turnpike which is owned and controlled by a private company, and is a source of great income to the parties owning same. Columbia has about 1500 inhabitants and is a model little city, and is one of the best inland towns in the State. The taxable property of the town is about $600,000.00. It has three banks, a bakery, laundry, roller mills, electric light plant, one college and four churches, and good macadamized streets.

Cane Valley is also a thriving little village of the county located on the Campbellsville and Columbia pike.

Adair County needs more good roads, and especially needs a railroad.

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ALLEN COUNTY.

Allen County is located in the southern part of the State, and is one of the Tennessee border counties. It was formed in the year 1815, and took its name from Col. John Allen.

The county is very irregular as to formation, being very much broken by hills and creek valleys, and parts of the county are some of the very best farming lands in the State.

Farming and stock raising are the principal industries. The principal crops being that of corn, wheat, oats, hay and tobacco, and much attention is given to the raising of fine stock such as horses and cattle.

The county has been well timbered, but most of the timber has been cut off and marketed, but there still remains a few of the old original tracts of timber, and they are among the best in the State.

Scottsville, the county seat, is a thriving little town located near the center of the county at the terminus of a branch of the L. & N. R. R., thus affording an outlet to the people to the South, but the method of getting in and out of the county to the north is very bad. The county needs more good roads and railroad facilities to the north.

Holland and Gainsville are also thriving little towns of the county and are next in size to that of the county seat.

There are about the following in the county: 38,556 acres of timber lands, 155,798 acres of cleared lands in the county. The amount of taxes paid in the county is about $30,000.00. The county has 71 common schools, 49 churches and two banks.

ANDERSON COUNTY.

Anderson County is located in the central part of the State in the beautiful Blue Grass region. It is bounded as follows, on the north by Spencer and Franklin, on the east by Woodford, on the south by Mercer and Washington and on the west by Spencer.

Anderson County has an area of about 200 square miles and a population about 16,000. The county has splendid railroad facilities, and both the Kentucky and Salt Rivers flow through the county.

Agriculture and stock raising are the principal industries, the chief crops raised are corn, wheat, oats, hay and tobacco. Considerable attention is given to the distillery busi-

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ness. There are some very large distilleries in the county. The county is also noted for the raising of vegetables.

Tobacco is the leading crop, and is raised to a very great extent. The tobacco raised in this county is the celebrated burley variety.

Cattle are shipped from this county in great numbers to the eastern markets, and much attention is also given to the breeding of fine horses.

The majority of the timber has been cut off, and what is left is mostly oak, beech, hackberry and walnut. Lead and zinc are found in this county, but not in any great quantities. Natural Gas is also found in the county.

The shipping facilities of this county are very fine both by rail and water. The county also has about 200 miles of turnpike, and the roads are very good.

Kentucky River furnishes abundant water power for any purpose that may be desired.

Labor, both white and colored, can be had at reasonable prices per day, or by the month. The county has a number of good schools, the school tax rate being thirty cents on each $100.00 worth of taxable property.

Lawrenceburg, the county seat, has a population of about 2,500. It has eight churches, good macadamized streets and concrete sidewalks, and is an up-to-date town of the State.

Tyrone, on the Kentucky River, is also a flourishing little town of about 500 people.

The county has 42 white schools and four colored schools, 2,874 white school children and 325 colored pupils in the school age; has thirty-six churches and six banks.

BALLARD COUNTY.

Ballard county was formed from part of the counties of McCracken and Hickman in the year 1842 and was named in honor of Captain Bland Ballard.

It is located in the extreme western part of the State and is about half way surrounded by the Mississippi and Ohio Rivers.

Ballard County is a very fertile County, while the high lands do not produce so well as the river valleys, or bottoms, but it is well adapted to the raising of tobacco, and produces a very fine crop of the dark tobacco.

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Agriculture is the chief occupation in this county, and the principal crops grown are about the same as the rest of the State, being corn, oats, hay, wheat and the vegetables, with the exception that cotton is grown in this county to some considerable extent.

The surface of this county is generally level, and the southern portion of the county originally was covered with a heavy growth of fine timber, but it has most all been cut off and sold.

Wickliffe, the county seat, is the largest town in the county and has about 1,600 inhabitants. Barlow, La Centre and Bandanna are the next towns in size and importance.

There are in the county 51 common schools and 4,095 children in school age, 40 churches and five banks.

BARREN COUNTY.

Barren County was formed in the year 1798, and is one of the oldest counties in the State, being the thirty-seventh county in the State. It is situated in the south central portion of the State, and bounded as follows: on the north by Hart county, on the east by Metcalf and Monroe, on the south by Monroe and Allen, and on the west by Allen, Warren and Edmonson.

The chief industry in the county is the raising of agricultural products and stock raising. Oil is found in fairly good quantities in the county, and is of a very fine quality. Natural gas is also one of the products of the county.

The chief crops are corn, oats, wheat, vegetables and fruits.

The soil is of a rich limestone nature and is very fertile, and a portion of the county is hard to beat in its production of farm products.

Stock raising is given some considerable attention in the county.

The county is crossed by two lines of turnpike, and by the L. & N. R. R., besides a branch of the L. & N. R. R. running from Glasgow Junction to Glasgow.

Glasgow, the county seat, is a flourishing town of about 3,000 inhabitants, and is an up-to-date town. It has two good schools with a patronage of several hundred students. The schools are well equipped with good buildings and a splendid lot of teachers.

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The county has an abundance of fine water, and the county seat is noted for its fine sulphur water, and is becoming a fine resort.

The farmers are very progressive, and are improving their annual yield of farm products by using a better system of farming and the use of better and purer seed.

There are in the county 112 common schools, with 8,146 pupil children. The county has 25 churches and 9 banks.

The county needs more railroads and better county roads.

BELL COUNTY.

Bell County is located in the extreme southeastern part of the State, and is known as one of the mountain counties. It is among the beautiful Cumberland and Pine Mountains and it is noted for its beautiful Mountain scenery.

Bell County has an area of about 360 square miles and a population of about 21,000 inhabitants.

The surface of the county is very uneven. The Cumberland and Pine Mountains cross the county from northeast to southwest and form almost a continuous bed of mountains. Yet the Cumberland river winds its way through the county and forms some of the most beautiful scenery to be found anywhere in the United States.

The mountains are filled with almost an inexhaustible coal deposit, and coal mining is the chief industry of the county. Bell County is the greatest coal producing county in the State, and the output of the county forms a good portion of the whole output of the State annually.

Some considerable attention is given to the raising of farm products, such as corn, oats and hay, the Cumberland River valley being exceedingly fertile. The valley or bottoms of the Straight Creek, Greasy Creek and Yellow Creek are also very fertile and afford some very fine farming land in this county.

The county is also covered with a good growth of timber, and Bell County has some of the finest tracts of timber in the State. There are several thousand acres of untouched timber in the county, and the coal and timber wealth of the county is very great.

Pineville, the county seat of the county, is located on the Cumberland River, near the mouth of Straight Creek, and is also near the L. & N. R. R. It is a very beautiful little city,

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with a population of about 2,000 people. It has a very fine system of macadamized streets and broad concrete sidewalks. Has a wholesale grocery house, light plant, bottling plant, ice factory, cane factory and is surrounded with a number of coal mines which are a great source of wealth to the town.

Middlesboro, the largest city in the southeastern part of the State, is also located in Bell county, and is one of the most beautiful cities in the country. It is located near the old historic Cumberland Gap battlefield, and is in the beautiful Yellow Creek Valley surrounded by the beautiful cloud-capped peaks of the Cumberland Pine Mountains.

Middlesboro is a very fine business town, besides being a much visited summer resort.

It has an iron foundry, tannery, laundries, steel plant, brewery, patent medicine factory, wholesale groceries, wholesale dry goods, furniture, fruit and coal exchanges. The city is surrounded by a number of coal mines, the officials of which most all live in Middlesboro. The L. & N. R. R. Co. have a yard and some of their officials live there, such as the superintendent of the Cumberland Valley division and the chief dispatcher.

Bell County has about 300 miles of railroad. Besides being completely crossed by the L. & N. it has a number of branches running to the various coal mines in the county.

The county has 65 common schools with about 8,900 pupil children and 40 churches and 6 banks.

The county, like all other mountain counties, is badly in need of better county roads, and the citizens are strongly in favor of the Good Roads bills which have been introduced in the State Legislature, and are willing to do anything in their power to help get better roads.

The county is also in need of some manufacturing industries, such as furniture factories, veneer factories, spoke or hub factories, etc., and will give liberal inducements to any companies or corporations who desire to come to their county to locate.

BOONE COUNTY.

Boone County was formed in the year 1798 out of Campbell County and was named for the famous old pioneer and hunter, Daniel Boone. It is located in the extreme northern part of the State and bounded on nearly three sides by the Ohio River.

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The chief industry of the county is farming and stock raising. The soil of the county is divided into two classes, the upland soils is of a clayey limestone nature, but very productive, being well adapted to the raising of wheat and fruit, while the Ohio River bottoms are of a black loam and is very productive, and well adapted to the raising of corn and tobacco. The tobacco grown in this county is noted for its fineness of quality and also for the quantity of the production.

The principal crops of this county are, corn, wheat, oats, tobacco, hay and fruit.

Boone County is the only county in the State that still retains the old system of tollgate turnpikes. There are several miles of turnpike in the county owned and controlled by private companies and kept up by the old tollgate system. There are also about 100 miles of turnpike in the county owned by the county and kept up by the same.

The county has both the L. & N. R. R. and the C., N. O. & T. P. R. R.

There are no factories in the county and the people depend almost entirely upon farming for their livelihood.

The schools in this county are in a poor state of progress, but some steps have been taken in the last three years to bring the schools up to the standard, and they are improving very rapidly, and if the present system is carried out it will soon bring them up.

The county seat of the county (Burlington) is situated in the northwestern part of the county. It is a very small town of about 500 inhabitants. It has no city government, has one bank, three churches, one graded school and a library.

The county needs some factories to give employment to the people, and a better interest taken in the common schools.

BOURBON COUNTY.

Bourbon County is one of the oldest counties in the State, having been formed by the Virginia Legislature in the year 1775, and was originally a part of the county of Fayette. It took its name from a French family of that name.

The county is located in the northeast central part of the State in the heart of what is known as the beautiful Bluegrass section, and is one of the wealthiest counties in the State. It is bounded on the north by Harrison and Nicholas, on the east by Nicholas and Montgomery, and on the south by Mont-

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gomery, Clark and Fayette, and on the west by Fayette and Scott.

It is watered by Stoner, Hinkston, Houston and Boone Creeks and the South fork of the Licking River. The county has a population of about 21,000, about 4,000 of this number being colored.

The soil of this county is wonderfully fertile, the chief industry is farming and stock raising. All the agricultural products common to this section of the country are grown in this county with a great degree of success. Corn, wheat, oats, tobacco, hemp, blue grass are grown in abundance. More blue grass seed are produced in this county than any other section of country the same size in the United States.

It is also noted for the raising of fine stock of all kinds. It is next to the county of Fayette in importance in the raising of fine stock, both horses and cattle. Some of the famous blue grass stock farms are located in this county, and are among the finest in the world. Aside from the fine horses of the county it has some very fine herds of dairy cattle and thousands of fine beef cattle are exported each year.

Fruit growing and truck farming are becoming very popular among the farmers, and diversified farming is attracting very much of the farmer's attention in this county. As a whole, Bourbon County is one of the best in the State, agriculturally speaking. There are two lead mines in the county, one at Paris, and one at Millersburg, but they are not of much importance. Bourbon county, like most all the other blue grass counties, has almost exhausted her timber resources.

Bourbon County has about 350 miles of macadamized roads made of crushed limestone and are as good as is to be found in the State. She has about 54 miles of railroad, besides the Bluegrass Traction Line which runs from Paris to Lexington. Paris is a good railroad center, having five branches of the L. & N. R. R. coming in there. It has a good-sized railroad yard and roundhouse.

Paris, the county seat of the county, is situated near the center of the county and on the railroads above mentioned. It has a population of about 12,000, with about 4,000 of them colored. It is a flourishing little city with good macadamized streets and concrete sidewalks. There are, in Paris, eight schools, among them being two colleges, one academy and four private schools. They also have ten churches, one library

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and six banks. The city has a novelty wood working factory, two distilleries and some nice flouring mills.

The county needs some shops and factories to give employment to their working people.

BOYD COUNTY.

Boyd county is the last county in the State going east on the Ohio River and has a great many commercial advantages over most of the other counties of the State, namely:

It is a coal timber and agricultural county, it has both water and railroad transportation, it is the eastern gateway of the State through which most of the products of the States of Virginia and West Virginia come to the cities of Louisville and Cincinnati, and is a great commercial county.

Boyd county is classed among the mountain counties, yet the hills for the most part are low and rolling while the Ohio River bottoms are wide and fertile. The entire county is drained by tributaries flowing north into the Ohio River, namely Hoods Fork, Bowles Fork, East Fork and other and smaller streams. The Creek Bottoms are generally wide and very productive, on the banks of East is said to exist the famous Bowling Silver mines. The Hill lands of the county are moderately productive, and contain much Iron ore and coal. The timber supply like most all the other counties of the State, has been used up, but there is still a great deal of timber in the county. The hill lands are well adapted to the raising of fruit and grasses, and make very pasture lands when properly set in grasses. The principal crops raised in the county are, corn, oats, wheat and hay. No more products are raised that are consumed at home. The soil of the county consists of sandstone and clay and a small amount of limestone soil in parts of the county.

Catlettsburg is the county seat and was named for Horatio Catlett, the former owner of the lands where the town is now located. The city is located at the mouth of the Big Sandy River, where it flows into the Ohio River, thus giving it a very favorable location as to shipping facilities, having both railroad and water ways over which to ship and travel. Catlettsburg has long been the timber market for almost the entire Big Sandy Valley, and is a prominent lumber and timber market. The population of the city is about 6,000 and is rapidly growing. It has several lumber

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manufactories and other industries which go to make it a live and up to date town.

Ashland the largest town of the county is situated on the Ohio River five miles northwest of Catlettsburg, and 150 miles above Cincinnati. It is principally a manufacturing town and has a population of about 12,000 inhabitants. It has electric lights, six schools, ten churches, and the streets are paved.

Boyd County has a total population of more than 25,000 people and has an assessed valuation of about $7,500,000.00. The road question has been quite a problem to the citizens of Boyd County. Although kept up by taxation they have succeeded in constructing more than 175 miles of piked roads in the county. The annual appropriation for this purpose amounts to about $4,000.00. The County needs better roads and the citizens are heartily in favor of good roads legislation.

BOYLE COUNTY.

Boyle County was created by an act of the Legislature in the year 1842, from parts of Lincoln, Mercer and Casey Counties. It is one of the smallest counties in the State having only about 112,000 acres in area, but it is one of the richest counties in the State. Its assessed valuation is more than eight and one-half million dollars.

It is located in the central part of the State and in the midst of the Blue Grass regions. The soil of the county is the very strongest of limestone, and will produce most any of the crops adapted to this section of the United States, and that in abundance.

Farming and stock raising are the principal industries of the county. Corn, tobacco, oats, wheat, hemp, timothy, orchard, grass and blue grass are grown in extensive quantities.

Boyle is also one of the best stock producing counties in the state, being well up in the raising of fine horses and fine cattle. The timber has all been cut off the land long ago, or about all of it; at one time there was a very heavy growth of fine timber on the land.

It is strictly an agricultural county, there being no minerals of any kind in the county that have ever been discovered.

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There are more than 125 miles of very fine piked roads, and can boast of having some of the finest in the country. They are adding to these roads each year by building new ones and are striving to make piked roads all over the connty.

Danville, the county seat is situated in the northeastern part of the county on the Queen and Crescent Railroad, and is a very beautiful little city; it is one of the oldest towns in the State, having been laid out the year 1782, by Walker Daniel and named for him, and incorporated by the Virginia Legislature in the year 1787.

Danville is one of the best school towns south of the Ohio River. Here are located, Central University, one of the oldest in the United States, Caldwell College for Young Ladies. The Kentucky School for the Deaf, Hogsett Academy, the city graded school and three private schools.

Danville has eleven churches, three banks, water works which is owned by the City, ice factory and laundry, and a Federal Government Building, which cost $100,000.00.

Junction City is located in the southwestern part of the county at the crossing of the L. & N. and Q. & C. Railroads, and has a population of about 1,500 people, has five churches, one bank, graded school, planing mill, tobacco factory, etc. Perryville is located in the western part of the county, and is a flourishing little town.

The county needs more good roads, and some roller mills to take care of the farmer's wheat that is grown in the county.

BRACKEN COUNTY.

Bracken County is located in the northeastern part of the State on the Ohio River, and is an agricultural county.

Farming is the principal industry, the chief crops being corn, wheat, oats, tobacco and hay. The surface is most generally hilly, or rolling, but the uplands are very fertile, producing very fine crops of corn, wheat or tobacco, and is especially adapted to pasturing when set in grasses. The soil is of limestone and very durable, even when it looks to be worn out, it is easily brought back to a state of fertility by rotating it in different crops, and taking good care of it.

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This county is particularly noted for the growth of Burley tobacco, and for the quality, especially in the fiber and color of the plant when cured.

This county is drained by the north fork of the Licking River, Big Bracken, Turtle, Locust, Sang Holts, and Big Kincaid Creeks and their tributaries. With the exception of tobacco, the farmers produce only about enough stuff to supply the home demand. This is a good fruit growing county and a great deal of fruit is grown here and of a very fine quality. Truck gardening is also an important feature of farming in this county.

There are a good many miles of piked roads in this county and the farmers are striving to get a better road system.

Brooksville, the county seat is located near the center of the county, but not on any railroad, and is a thriving little town. The county seat has macadam streets, concrete sidewalks, town lighted with electric lights, four churches, one graded school, one library and two banks, and a population of about 1,000 people.

Augusta, the largest town in the county, is located on the Ohio River, and C. & O. R. R. and is a thriving town of about 2,500 inhabitants. It has a graded high school, two banks, macadam streets, concrete side walks, a shoe factory, machine shop, buckle and specialty factory.

The county has forty-two common schools, with about 3,500 pupil children.

BREATHITT COUNTY.

Breathitt County is located in the eastern part of the State and is bounded as follows: on the north by Wolfe, Lee and Magoffin Counties, on the east by Magoffin and Knott, on the south by Knott and Owsley, and on the west by Owsley and Lee Counties.

It is a mountainous county and the surface is very irregular being of sandstone formation. The mountains are underlaid with coal, and a good portion of the surface is covered with timber, though the best of the timber has been cut out and marketed.

The county is drained by the Kentucky River and its tributaries. The principal streams are the Kentucky River, Frozen Creek, Lost Creek, Quick Sand and Troublesome

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from the North and Cane Creek and War Creek from the other parts of the county.

The soil is farmed by the decay of the sandstone and vegetable matter on the clay sub-soil which is comparatively thin on the hill lands but rich and fertile in the river bottoms and valleys, and is there very fertile to most of the common crops of this section, such as corn, oats and hay.

Much attention is given to coal mining and lumbering in this county, but considerable attention is also given to farming and stock raising. There are not enough farm products raised to supply the home consumption, and much food stuff is shipped in to the county and sold. Tobacco is not very extensively grown, but within the last year it has been shown by experiment that the soils very well adapted to the growth of tobacco, and the quality is very fine.

This county has both bituminous and cannel coal of very fine quality, and the wealth of the county is recognized as being in the coal and timber, and when the county is fully developed it will be one of the wealthy counties of the State.

There are more than 6,500 children in the school age in this county, with 89 common schools. and forty-one churches.

Jackson is the county seat, and is located on the Kentucky River, and is at the present time the terminus of the L. & E. branch of the L. & N. R. R., but they are extending it several miles further up the river into Letcher County. Jackson has a population of about 600, and is a thriving little town for business.

The county needs better roads, and wood working manufactories.

BRECKENRIDGE COUNTY.

Breckenridge County was formed out of a part of Hardin County in 1799; it lies in the northwestern part of the State on the Ohio River. Breckenridge now has a population of about 23,000; it has an area of 595 square miles, being the sixth county of Kentucky in size. The soil of the county is generally very fertile, much of it is limestone. Tobacco, wheat, corn, hay, vegetables and fruit are the chief products; it is one of the first tobacco counties of the State. The timber of the county is oak, poplar, hickory, walnut, chestnut, ash, beech, etc. The average selling price of land

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is $10 and $15 per acre. The soil and good water supply make the county one of the very best for stock raising.

Breckenridge County has fine schools, both public and private. The farmers of the county are prosperous. The Louisville, Henderson and St. Louis R. R. operates seventy miles of road through the county, another road is being built, which has its shops at Cloverport, and employs a large number of men. Cloverport has many prosperous industries, such as saw mills, flour mills, canning factory, etc. Breckenridge County has nine banks. The State and county taxes together is ninety-three cents on the $100 taxable property. Hardinsburg is the county seat. Asphalt, limestone, sandstone and natural gas, are found in abundance in certain localities of the county. White Sulphur and Tar Springs near Cloverport are famous. Some of the important towns are Cloverport, Hardinsburg, Stephensport, Irvington, Webster, Garfield and others. Breckenridge County is in the fourth Congressional District; second Appellate; ninth Judicial; tenth Senatorial and twenty-eighth Legislative Districts.

BULLITT COUNTY.

Bullitt County, the twenty-second county organized in the State, was organized in the year 1796 out of parts of Jefferson and Nelson counties. It is situated in the north central part of the State and bounded on the north by Jefferson, on the east by Spencer and Nelson, on the south by Nelson and Hardin, and on the west by Hardin and Meade. The principal streams of the county are Salt River, Floyd's Fork, North and Rolling Forks, tributaries of Salt River.

There are found in this county an abundance of iron ore and oil and gas are both found here, but neither have been developed yet. It is said that the first salt made west of the Alleghany Mountains was made in Bullitt County.

The soil is a mixture of clay, lime and sand, and produces fairly well. The lower, or bottom lands produce corn in abundance, while the uplands are better adapted to the raising of the smaller grains and fruit. A great deal of fruit is shipped from this county each year, and the fruit industry is becoming more and more popular each year.

Truck gardening is also an important industry in this county, owing to the ready market found for it, and the soil is very well adapted to the raising of vegetables.

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The chief industry of this county is farming, with the exception of a few saw mils, and a few flour mills.

There are about 50 miles of macadam roads in the county which have only been in use for about three years, and the remainder of the roads of the county are dirt roads, and are kept up by a system of taxation and free labor.

Shepherdsville, the county seat, is situated on the Salt River, twenty miles above its mouth and eighteen miles south of Louisville on the main trunk line of the L. & N. R. R. It has a population of about 900 people; has three churches, one white graded school and one colored, one library and two banks.

There are 37 common schools in the county, 3,550 pupil children and thirty-two churches.

BUTLER COUNTY.

Butler County was founded in the year 1810 by parties living in what was then Logan and Ohio counties, from which the county was taken. It received its name from Gen. Butler, an officer in the Revolutionary War. The surface of the county is hilly, the soil reasonably fertile and most of the county produces good crops of corn, wheat, tobacco and hay. There is quite a lot of coal in the hills of the county and several mines have been opened and the coal shipped out by boat on Green River, which runs through the county.

Morgantown, the county seat, is a picturesque little town of about 1,800 inhabitants, located on Green River and is noted for its lofty site and beautiful scenery, has two large banks, one roller mill, one planing mill and some four or five coal mines.

There are 90 common schools in the county with 5,877 pupils, 787 churches and four banks.

CALDWELL COUNTY.

Caldwell county was founded in the year 1809 and was the fifty-first in order of formation in the State and was named for Gen. John Caldwell. It is situated in the Western part of the State, on the Cumberland and Tradewater Rivers, and was originally a part of Livingston county.

The surface of the county is very uneven, or in other words is hilly and broken. The soil is of a sandy mixture

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having a limestone foundation, and is reasonably fertile, bringing forth good crops of corn, wheat, oats and hay and tobacco.

Princeton, the county seat, is a town of about 5,700 inhabitants, and is the largest town in the county, and is located near the center of the county on the I. C. R. R. It is a rich farming district. There are several other small towns in the county, Fredonia being the largest.

There are about 65 common schools in the county with about 4,962 pupil children, 42 churches, three banks and two newspapers.

CALLOWAY COUNTY.

Calloway county was formed in the year 1822, out of a part of Hickman county, which then embraced all of what is now Marshall county, which has been formed into a separate county since that time.

Calloway county is situated in the Southwestern part of the State on the Tennessee River, and is very level. The soil of this county is very fertile, and farming is the chief industry of the county. Corn, wheat, oats and tobacco are the principal crops raised here. It is noted for its tobacco crops, they are very heavy and of an unusually fine quality. Corn is also grown in abundance and is next in importance to that of tobacco. Wheat is grown in good quantities but the quality is not so good as that of tobacco and corn. Oats and hay are also grown to considerable extent.

There is found in this county a very fine quality of potter's clay and ochre, both of which are mined and worked.

The formation of the soil of this county shows that at some pre-historic time, this section of the State was covered with water and is of rich alluvial nature.

Murray, the county seat is the largest town in the county and has a population of about 3,000 inhabitants. Hazel and Dexter are two other flourishing towns of the county.

There are 86 common schools in this county with about 7,000 pupil children, 67 churches, 4 banks and 3 newspapers.

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CAMPBELL COUNTY.

Campbell County is a very old county, being the nineteenth county of the State. It was formed out of the counties of Harrison, Scott and Mason, in 1794; it being situated in the extreme Northern part of the State. It is a very long and narrow county and is bounded on the North and East by the Ohio River, on the South by Pendleton County, and on the West by Licking River. It is drained by the Ohio and Licking Rivers and their tributaries which furnish it an abundant supply of water. The surface of the county is very hilly with the exception of the river bottoms. The soil is limestone and produces well; corn, wheat and tobacco being the staple products of the farm. Alfalfa is fast becoming a favorite plant in this county; it grows excellently well in this county; most all of the native grasses grow well in this county. Truck farming and fruit growing constitute the principal industry of the county; fruit is grown in abundance and mostly assigned to commission houses in Newport, Covington and Cincinnati, where it is put on the market at from five to eight per cent. commission.

There are no minerals found in this county. There are two railroads in the county; the C. & O. has 26.05 miles and the L. & N. 3.33 miles, making 29.38 miles all told.

Campbell county has a population of about 62,000, about 4,000 of them being colored. There are about seventy-five miles of turnpike roads in the county which are reasonably good and about eighty-five miles of dirt roads.

Campbell County, like Kenton, has two county seats, one at Newport on the extreme Northern border of the county and the other at Alexandria, a small inland town in the central part of the county. The larger part of the business being done at Newport, the county officials are located at Newport with their assistants at Alexandria; their courts are about equally divided between the two county seats. Alexandria is quite a nice little town with a population of 500, having four churches, one bank and two schools, concrete sidewalks and macadamized streets and is lighted with gas.

Newport, the main county seat, is located on the Ohio River. It has a population of 35,000, has a good system of

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street railway, and all of the modern conveniences of a city of that size.

Postoffices: Alexandria, Brent, California, Campsprings, Carthage, Clayville, Dayton, Cold Springs, Fort Thomas, Grants Lick, Gubser, Hawthorne, Johns Hill, Kopler, Melbourne, Mentor, Newport, Oneonta, Polls Creek, Ross, Rouse, Ten Mile, Trace and Schoolfield.

DAIRYMEN.

NAME	LOCATION	P. O. ADDRESS	NO. COWS
Wm. McDonald .. 1	4 and 12 mile pike..	Brent	12
John Guy 2	Ft. Thomas.....	Ft. Thomas.....	5
Susan Gubser ... 3	Daglin pike.....	Dayton	20
John Kuchler ... 4	Alexandria pike....	Ft. Thomas	18
A. Bickers 5	Calvert Run pike...	Bellevue	46
A. Minchall 6	Ft. Thomas.....	Ft. Thomas.....	5
John Class 7	Calvert Run pike...	Ft. Thomas.....	12
A. Pleyman 8	Ft. Thomas.....	Ft. Thomas.....	21
Geo. Wooke 9	Alexandria pike....	Newport	200
Ben Jensing 10	Southgate	Newport	34
F. Shuerman 11	Alexandria pike....	Newport	43
F. Dunterman ...12	Grand Avenue.....	Newport	50
Gus Shuerman ...13	Grand Avenue.....	Newport	35
Mrs. Yung & Sons 14	Newman Avenue...	Ft. Thomas.....	27
Phil Sauerbeck .15	Licking pike.....	Johns Hill.....	28
Herman Feltman 16	Licking pike.....	Johns Hill.....	46
Herman Deckman 17	Licking pike.....	Johns Hill.....	12
Geo. Wyman 18	Licking pike.....	Johns Hill.....	30
Louis Woltzman .19	Licking pike.....	Johns Hill.....	24
J. D. Baslin.....20	Licking pike.....	Cold Springs,R.F.D.	20
A. Deye 21	Licking pike.....	Cold Springs,R.F.D.	35
J. Koukerweller .22	Licking pike.....	Cold Springs,R.F.D.	55
Albert Luersen ..23	Licking pike.....	Johns Hill.....	27
Henry Feldman ..24	Licking pike.....	Johns Hill.....	29
Reo Northcutt ...25	Clifton	Newport	9
John Yeager 26	Clifton	Newport	5
Moreland Bros. ..27	Bellevue	Bellevue	6

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CAMPBELL COUNTY.

Number acres Timber Land..... 2,800
Number acres Cleared Land..... 114,193
Crops grown Corn, Wheat, Oats and Tobacco.
Total value property owned.....$22,980,983
Total amount taxes paid.....$17,350,686
Average price of farm land $65.00
Number of churches 39
Number of whites.....58,360
Number of colored..... 4,600
Number of children in school..... 10,000
Number of voting age 13,000
Value of poultry and poultry products.....$500.00
Average price of farm labor .....$1.50 per day, $40.00 per month
Labor scarce
Soil limestone and sand.

Burley tobacco	1,196 acres
Wheat	2,000 acres
Corn	4,500 acres
Clover	2,800 acres
Alfalfa	800 acres

CARLISLE COUNTY.

Carlisle County is in the extreme Western part of the State in the Mississippi Valley and the surface of the county is very nearly level and the soil is very fertile and shipping facilities are unusually good, and the markets are accessible for all the products grown by the farmers. The Mobile & Ohio Railroad, and Illinois Central, both cross the county. St. Louis, Chicago, Louisville, Cincinnati, New Orleans and Memphis can readily be reached by these roads, thus affording a through haulage for all the fruit, vegetables and farm products to the very best markets of the country.

Farming, truck gardening and fruit growing are the chief industries of the county. Much attention is given to the raising of small fruits, such as berries. In the year 1904, the berry crop alone amounted to more than $100,000.00 and the bean, spinach, cantaloupes, melons, etc., are equal in the farm values to the berry crops, thus giving the farmers of this section nice profits on their labors.

Fine clay is also found in this county and it is one of the foremost counties in the State in the manufacture of earthenwares. Clay for the manufacture of any kind of ware can be found in this county, except that of pure white. Some of the clay mines are within a few hundred feet of the railroads, thus making this one of the principal industries of the county.

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There are some very fine medical springs in this county also, and it is becoming a popular health resort.

There are in the county several saw mills, planing mills, canning factories, etc.

The county has a very good road system and the roads of this county are among the best in the State. They are kept up by a system of taxation and free labor and much attention is given to the roads of the county. Bardwell, the county seat is located on the I. C. R. R. and has about 2,500 inhabitants and has good schools, banks, etc.

CARROLL COUNTY.

Carroll county is located in the Northern part of the State on the Ohio River. The Kentucky River runs through the central part, Little Kentucky River through the Western part and Mill, Notch, Locust, Lick, Dennis and Rowland Creeks also run through the county, thus making it one of the best watered counties in the State.

The uplands of the county are hilly and rough, but produce fairly well, the soil being of gray limestone and clay. The principal crops are corn, hay, tobacco, wheat and oats.

The valleys of the Kentucky and Ohio Rivers, which comprise the greater part of the county are very fertile. The soil is deep and rich and there are a great deal more vegetables, fruits and farm products produced in this section of the county than are consumed. The county has fine shipping facilities, having both the L. & N. and C. & W. Railroads and the Ohio and Kentucky Rivers are both navigable for shipping purposes, thus giving the county wonderful advantages along this line. There are no minerals found in this county and the timber supply is about gone, thus leaving the chief industry of the county as that of farming and truck gardening.

There are about 175 miles of turn pike in the county and more than 100 miles of dirt road.

Carrollton, the county seat is situated on the banks of both the Ohio and Kentucky Rivers in the Northern part of the county; it is a good business town, has a population of about 3,500 people, has six churches, one hospital, one common and one graded school and two banks, one furniture factory, saw mill, planing mill, creamery and ice plant.

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There are 25 churches, five banks, 24 common and 4 graded schools and about 2,000 pupil children in the county.

CARTER COUNTY.

Carter County is located in the Northeastern part of the State in the mountain region and is noted for its mineral wealth.

It is bounded on the North by Lewis and Greenup, on the East by Boyd and Lawrence, on the South by Elliott and Lawrence and on the East by Elliott, Rowan and Lewis. The county abounds in mineral wealth, having an abundance of coal, both bituminous and cannel, iron ore, oil, natural gas, mica, lithograph stone, sand glass, asphalt and fire clay. The fire clay of this county is noted for its quality and quantity. There are numerous fire brick factories in the county and they turn out as fine a quality of fire brick as is to be found anywhere in the United States. The Lithograph stone is also of a very fine quality and in almost inexhaustible quantities. The glass sand is of a very fine quality, but the quantity is limited. The oil and natural gas have never been sufficiently developed to know whether they are in paying quantities or not. The asphalt is of a fine quality and in great quantities and is looked to as one of the county's chief sources of wealth.

Considerable attention is given to farming in this county and the farmers are more than supplying the demand of home consumption. Corn, wheat, oats, hay and tobacco are the chief crops raised in this county. The flat hillsides of the East end of the county produce fairly good yields of tobacco and of a very fine quality, while the remainder of the county is well adapted for the raising of the other crops mentioned. Little attention is given to the raising of stock. The county is not up to the standard along this line. It is well adapted to the raising of sheep and goats and the time is not far distant when it will become one of the foremost counties in the State in this industry.

Carter county has four railroads and the shipping facilities are good. Grayson is the county seat and is a thriving little town, is located on the railroad. Olive Hill is the largest town in the county and is a flourishing town.

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CASEY COUNTY.

Casey county is located in the South central part of the State. The surface of the county is hilly and broken. Farming is the chief industry of this county and the principal crops are corn, oats, wheat, hay and tobacco. In the Eastern portion of the county, next to Lincoln county, the soil is well adapted to growing of blue grass. The county also provides a large quantity of fruit and vegetables.

Nearly fifty per cent of the county is in timber land, but the best part of the timber has been cut off and sold in the markets. Hickory and cedar timber are still found here in abundance. and are very valuable.

Liberty, the county seat of the county is located near the center of the county on the banks of the Green River and has a population of about 650 people, has three churches, one bank, one graded school, two hotels and one newspaper.

There are in the county 72 common schools with about 5,675 pupil children and 53 churches.

CHRISTIAN COUNTY.

Christian County was founded in the year 1796 and took its name from Col. William Christian. It is located in the Southwestern part of the State and is one of the Tennessee border counties. It is one of the largest counties in the State. and also one of the wealthiest.

The Southern portion of the county is purely an agricultural section and farming is the chief industry. Corn, wheat, oats, hay and tobacco are the principal crops raised in this county. The Northern part of the county is not well adapted to farming as the Southern part as it is not so level, but has a good growth of timber and maintains a large population.

The county has two railroads and the shipping facilities are very good. The farmers have a great advantage in shipping their products to market. The soil of this county is of a red clay or limestone on a limestone foundation and is very durable.

Hopkinsville, the county seat, is located near the central part of the county on the Louisville and Nashville Railroad and is also the terminus of a branch of the L. C. R. R. The county seat is a good business town of about 11,000 popula-

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tion. Pembroke is the next in size and is located in a very fine farming section and is a growing town.

There are in the county 137 common schools and about 12,000 pupil children. There are also 122 churches, nine banks and six newspapers.

CLARK COUNTY.

Clark County is located in the East Central part of the State and is one of the famous blue grass counties. It originally embraced about one-third of the State, practically all the land East to Virginia line. It is an agricultural county and the chief crops grown are the tobacco, corn, wheat, oats, hemp, hay and all the vegetables which are grown in this section of the country. The soil is generally of limestone formation and is very fertile, especially in Western part of the county. In the Southeastern portion of the county the surface is very hilly and broken, but it is underlaid with rich beds of phosphatic limestone, hydraulic lime and building stone of a good quality. There is also some oil and natural gas in this section of the county and a good quality of potter's clay. There is but a small amount of timber left in the county and such as there is, is of little value.

Diversified farming is demanding the attention of the farmers to a great extent, while corn, wheat, oats and tobacco are the staples of the farm. Fruit growing and truck farming are being engaged in very extensively and dairying is also a very important industry of this county. It is also one of the foremost counties in the State in the raising of fine stock and especially of fine herds of short horn cattle and she also produces many good horses, mules, sheep and hogs.

The county has about 225 miles of fine macadamized roads which are kept in good condition.

Winchester, the county seat, is located near the center of the county and has the distinction of being blessed with three different railroads, L. & N., the C. & O. and the L. & E., thus giving the county very fine shipping facilities and the farmers a decided advantage over a great many counties in the State in the marketing of their farm products and livestock. Winchester has a population of about 9,500, has good macadam streets, concrete side walks, a good system of water works, electric lights. It has four banks, four schools, three

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graded schools and one college. The sanitary conditions of the city are very good.

The town needs more shops and factories and better roads.

CLAY COUNTY.

Clay county is located in the Southeastern part of the State on the headwaters of the Kentucky river and is one of the mountain counties, bounded as follows, on the North by Owsley and Jackson, on the East by Owsley and Leslie, on the South by Knox and Bell and on the West by Laurel.

The surface of Clay county is very hilly and broken, though the mountains are not so high as those of some of the counties further East in the State, but they are all underlaid with a very fine vein of bituminous coal and a portion of the county is underlaid with a fine quality of cannel coal. A good portion of the county is covered with timber, though the best part of the timber has been cut out and floated down the Kentucky River and marketed. The principal timbers left now, are the oak, hickory, chestnut, beech and a small per cent. of the poplar. There are, however, some very fine tracts of timber still left in the county and rank among the finest of the State, but they are rare.

Some considerable attention is given to farming; the principal crops raised are corn, oats and hay. However, for the last three years the farmers have been growing tobacco to a considerable extent, and yield is very satisfying, and the quality excellent, being even above that produced in the blue grass region of the State; the tobacco industry bids fair to become the chief industry of this county as well as a great many other mountain counties. While the most of the county is hilly and broken, there is a great deal of very fine farming land along the creeks and rivers and it is very fertile.

The greatest wealth of the county is in its coal and timber and it will be a very wealthy county as soon as it is developed. The county has no railroads, and is handicapped in that way.

Manchester, the county seat, is a small town of about 500 people, and is located on what is known as Collin's fork of Goose creek or the South fork of Kentucky River.

This county, like all the other mountain counties, has bad roads and the citizens are very much in favor of the good

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roads law, and willing to do anything in their power to get better roads.

The county needs better roads and is badly in need of railroads over which to market their coal and timber.

CLINTON COUNTY.

Clinton County is in the southern part of the State and borders on the Tennessee line. This county was created in 1836 from parts of Wayne and Cumberland counties. It is one of the small counties of the State, being only about 270 square miles in area.

Farming is the principal industry in this county. The principal crops grown are corn, wheat, hay and oats.

The surface of the county being hilly, caused by the spurs of the Cumberland Mountains extending into the eastern part, is a drawback to the cultivation of some sections of the county but it adds to the live stock industry. Cattle, hogs, sheep, mules and jacks are raised extensively.

The most serious drawback the county has to its immediate prosperity is the lack of transportation facilities. There is no railroad in the county and shipping must be done by way of the Cumberland River, when this is navigable. When the river is not navigable they must haul their goods from Burnside, in Pulaski County, which is 40 miles northeast of Albany.

There are several coal banks in the county, but as there is no railroad to ship it to market it is only mined for home use. When the railroads reach Clinton County and these mines are properly worked, they will prove a source of wealth to the county.

There is a great deal of timber in this county, especially in the northern section.

Albany is the county seat. It is situated near the center of the county and is a very flourishing little inland town.

CRITTENDEN COUNTY.

Crittenden County is located in the southwestern part of the State, and is very much diversified as to formation of surface. A good portion of the State is very hilly and broken. The hilly portion of the county is very rich in minerals and the level or smooth portion of the county is well adapted to farming.

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The soil of this county is of a clay formation and is not so fertile as is in some of the adjoining counties, yet the county produces a large amount of farm products. The chief farm products are corn, hay, wheat and tobacco.

The chief minerals of the county are coal, zinc, lead, iron and fluor spar, and have all been successfully mined.

Marion, the county seat of the county, is a town of about 2,800 inhabitants, is located on the I. C. R. R. in the central part of the State, and the principal industry of the county is fluor spar milling.

There are in the county 57 common schools, and about 4,500 pupil children, 47 churches and three banks.

CUMBERLAND COUNTY.

Cumberland County is located in the extreme southern part of the State on the Tennessee border.

The county has no railroads, but the Cumberland River which flows through the county is navigable for good-sized boats and this affords good shipping facilities for the shipping of the products of the county.

A portion of the county is very irregular and broken, and a portion of it is very smooth and level. The principal industry of this county is farming, and the chief crops are corn, wheat, tobacco and oats. Cumberland River, Big and Little Renox, Marrow Bone, Crocus, Mud Camp, Bear, Goose and Potter's Creeks all run through this county and the valleys or bottoms of them are extremely fertile, and especially that of the Marrow Bone Creek. The bottoms of this creek are broad and among the most fertile soil in the State is found in the valley of this creek. Corn, wheat and tobacco are grown here to a degree almost unsurpassable in the State.

Burksville, the county seat, is located on the Cumberland River, near the center of the county, and is a good country town of about 800 inhabitants. The nearest railroad station to Burksville is about 40 miles away.

There are 52 common schools in the county and about 2,000 children of school age, 39 churches and one bank.

The county has some piked roads, but the greatest needs of the county are better roads and a railroad.

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DAVIESS COUNTY.

Daviess County is located in the northwestern part of the State on the Ohio River, and embraces about 400 square miles of territory.

This county has an advantage in transportation facilities. It has the Ohio and Green Rivers for several miles, which are both navigable for shipping by boat, and has two railroads, the L. & N. and I. C. which is an advantage over most of the counties of the State in this respect.

The surface of the county is generally level along the rivers, but in some parts of the county the surface is very irregular and broken with low winding hills.

This county is principally an agricultural county, though there are to be found in the county large quantities of coal, fire clay, sand for making glass and other minerals, and some parts of the county show strong indications of oil and natural gas.

The soil of the county is of a rich sandy loam formation, and abundant crops of corn, tobacco, wheat, oats and hay, as well as a heavy yield of vegetables are produced in most parts of this county.

The coal in a good portion of the county is a continuation of the Illinois coal fields, and carry the same seams of coal, while in other parts of the county it is altogether different, and of a semi-cannel formation, but is equally as valuable as the other coals.

The fire clays of the county are very valuable, there being a diversified quantity of same, some adapted for the making of the celebrated fire brick, other for tile making, such as the red, buff, terra cotta and yellow, and there are still other clays of the kaolin, pipe and potters quality.

Owensboro, the county seat, is situated in the north central part of the county on the Ohio river and has both the above-mentioned railroads, and is a town of about 26,000 inhabitants, and is the commercial center of that locality. It has several shops and factories of different kinds, has several good substantial banks, churches and a good system of schools. The county needs better county roads and more factories.

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EDMONSON COUNTY.

Edmonson County is located a little west of the central part of the State and is bounded as follows: On the north by Grayson and Hart, on the east by Hart and Barren, on the south by Warren and on the east by Warren and Butler.

The county is rich in timber and minerals, the chief wealth being in the timber of the county. This has been the chief industry of the county for a long time. There are two navigable rivers flowing through the county, thus giving splendid water transportation for the lumbering in the county. By reason of the construction of lock and dam No. 6 navigation has been extended to Bowling Green and Mammoth Cave.

The greater portion of the Northern part of the county is underlaid with coal and asphalt; liquid asphalt also abounds in the county and is very valuable. Farming lands are only worth from $5.00 to $50.00 per acre. This is not a farming county, although a little corn, wheat and other farm products are raised in this county, but not near enough to supply the demand of the consuming public in the county.

Brownsville, the county seat, is located on the Green River and has about 700 inhabitants.

This county has many natural wonders, among which is the world renowned Mammoth Cave, the greatest wonder of its kind in the world. There are also several other underground caverns which have attracted much attention.

The roads in this county are not very good and better roads are very badly needed by the citizens.

ELLIOTT COUNTY.

Elliott County is located in the eastern part of the State and the surface of this county is very rough and irregular. This is a very mountainous county with narrow bottoms between the mountains widening to the north as they approach the Little Sandy River, the principal stream of the county, taken together with its tributaries drain the entire county.

Farming is the principal industry of this county. The soil is of a sandstone formation upon a clay subsoil. The farmers raise enough stuff in this county to supply the demand. While the soil is fertile it is very rough and hard to cultivate. The roughest and steepest portion of the culti-

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vated lands are used for pasturing cattle and sheep which are extensively raised in this county and especially the latter. This industry is one of the principal methods by which money is brought to the county. There being several thousand dollars each year brought to the county by the sale of cattle and sheep.

The county is also very rich in its mineral wealth, the chief of which is coal, but it is almost wholly undeveloped on account of there being no railroads in the county, and the owners of the mineral have no way of shipping same. There is also found in this county oil and natural gas, but they too are undeveloped.

Sandy Hook, in the south central part of the county, is the county seat. It is a small town of about 300 inhabitants, and the center of merchandising in the county, and is located on the Little Sandy River.

The roads of this county are very bad and the necessity of better roads is engaging the attention of the citizens of this county to a great extent, and the county is also badly in need of railroads that they may develop their natural resources.

ESTILL COUNTY.

Estill County is located in the foothills of the Eastern part of Kentucky, and the surface is much broken and very irregular owing to the fact that there are many mountains and low hills in the county, but at the same time there are much broad level bottom lands along the Kentucky River, and its tributaries which drain the entire county. The construction of Lock and Dam No. 11, has made the Kentucky River navigable for some miles above Irvine, the county seat, for steam-boats, and has thus been a source of much benefit to the farmers living along the river.

The soil is a mixture of limestone and sand and is well adapted to the growth of corn, wheat, tobacco, oats, and other farm products, the chief crop grown in this county being corn, and plenty is grown to supply the demand. While the soil is very well adapted to the raising of tobacco, it has never been very extensively engaged in, although the quality and quantity produced is very fine.

The principal minerals of the county are iron, coal and oil, at one time there were three iron furnaces in operation in this county but owing to the lack of shipping facilities

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they had to shut down, on account of not being able to compete with the market.

The coal and oil deposits of the county are almost wholly undeveloped and mean little to the citizens at the present time.

The county roads of this county, like most all the other mountain counties, are very bad, and the people are urging good roads legislation and say they will do anything in their power to secure it.

The needs of the county are better roads and manufacturies, especially wood working factories, as the timber supply for this purpose is plentiful.

Irvine, the county seat is located near the central part of the county on the Kentucky River, and is a good live little town. It has no shops or factories, but is located in the midst of a fine farming section and is a great tie market, the ties being shipped down the river and landed there and then shipped by rail.

FAYETTE COUNTY.

By an act of the General Assembly of the State of Virginia in 1780, the county of Kentucky was divided into three counties, Jefferson, Lincoln and Fayette; Fayette comprising all the territory bounded by the Big Sandy, Ohio and Kentucky Rivers. In area it exceeded both the other counties and comprised most of what is now known as the Bluegrass region of Kentucky. It was named in honor of the distinguished General Gilbert Motier de LaFayette, who had so ably helped America in gaining her independence. Later it was divided and sub-divided in the formation of other counties, until it has dwindled to an area of 275 square miles bounded by Scott on the north, Bourbon and Clark on the east, Woodford and Jessamine on the west and Jessamine and Madison on the south.

Fayette County is in the center of the rich and famous Bluegrass region of Kentucky. Horse racing and thoroughbred breeding seems to have originated in Fayette County in so far as Kentucky is concerned. As early as 1779, horse racing began in Lexington, there being a half mile straightaway track. The racial increase of population mostly from Virginia brought to the county many noted thoroughbreds from the Old Dominion, thus creating that love for horse racing which has characterized the Kentuckian until the pres-

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ent. It is this county that has made Kentucky famous in all part of the world for the production of the fleetfooted equine and other stock as well, such as thoroughbred cattle, sheep and hogs.

With the exception of a few acres along the Kentucky River which is hilly and rough, the surface of the county is gently undulating; deep rich clay soil underlaid with both blue and gray limestone. It is the limestone chemically acted upon by the elements that gives this land its great strength and wearing qualities.

North and South Elkhorn with their numerous tributaries and the many large springs furnish the county with an abundance of stock water. The staples of the farm are tobacco, corn, hemp and wheat. Other cereals are grown, but not in large quantities. There is a large acreage of the county devoted to grazing. There is but little timber left in the county. The agricultural value of the land has caused the denuding almost of the whole county of her timber supply. Fayette County has three hundred and sixty miles of macadamized roads as good and probably better than any other in the State. The county has the remarkably small amount of fifteen miles of dirt road.

Lexington, the county seat of Fayette county, is located in the central part of the county. It is penetrated from the east by the C. & O. railroad, from the west by the L. & N., from the north and south by the Kentucky Central, now controlled by the great L. & N. system, and also connected with the cities of Paris, Georgetown, Frankfort and Versailles by interurban lines, making her transportation facilities equal to any in the country.

Lexington is a second class city, with a population of forty thousand, about sixteen thousand of them colored. The streets are macadam brick and wooden blocks. They have both a good system of street railway and water works and good fire protection. The city has eleven public schools, three private schools and several colleges, among which are Sayre Institute, Hamilton College and St. Catherine's Academy, all for the education of females. Smiths and Jones Business College and the Transylvania, a Bible Institute for males once known as the Kentucky University, and the now Kentucky University, once know as the Agricultural and Mechanical School, both being changed by Act of Legislature

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of 1903. Lexington has one public library, two hospitals, eleven banks, six lumber mills, one automobile factory, three brick plants, seven tobacco warehouses, three cooperages and small industries too numerous to mention.

Postoffices—Anthers, Avon, Brighton, Chilesburg, Cleveland, Donerail, Elk, Chester, Greendale, Lexington, Muir, Yarnallton.

Lexington is just entering upon a great reconstruction period with regard to her streets.

The Lexington postoffice receipts for the year ending July 30, 1910, amounted to $117,920.90.

Lexington has five steam railroads, and is connected with five bluegrass county seats by electric interurban railways.

Lexington has ten banks and trust companies with a combined capital and surplus of more than four and one-half million dollars.

The Lexington Clearing House reports show a total of $42,899,583.21 for the year ending August 31, 1910, as against $33,074,626.00 for the year ending August 31, 1909.

Lexington enjoys the distinction of being the Athens of the South, because of the number and character of her educational institutions.

Lexington has two tobacco factories, manufacturing smoking and chewing brands, four cigar factories besides a plant that manufactures tobacco hogsheads.

Lexington has several distilleries, manufacturing whiskey which is shipped into almost every State in the Union, and a brewery selling its product in six States.

Lexington has a splendid public school system. Last year the enrollment was 5,292. There are six buildings for white children and three for colored children.

Lexington has ten wood-working plants engaged in selling lumber at wholesale and retail, besides manufacturing hardwood furniture and building materials.

Lexington is one of the oldest cities of the country. It has many historical associations, and has been the home of many great men. The city was settled in 1776.

Lexington is headquarters for fifty of the greatest horse breeding farms in the world. The plant of James B. Haggin alone comprises eight thousand acres of land.

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Lexington has cheap fuel. Kentucky has 16,000 square miles of workable coal area, most of it practically untouched, and Lexington is the gateway city to these vast resources.

Lexington has a large number of choice retail houses. The city is the retail market of Central Kentucky. The merchants are public spirited. The stocks are kept in a most complete and up-to-date condition.

Lexington has fifty wholesale houses, selling groceries, meats, hay, grain, feed, lumber, chinaware, drugs, dry goods, notions, hardware, implements, whiskey, cigars, tobacco and other articles. It has splendid flouring mills.

At Lexington are located the offices of the Burley Tobacco Society, a two million dollar corporation organized and controlled by the growers of burley tobacco for the purpose of pooling the crop in the interest of high prices.

Lexington has seven loose leaf tobacco warehouses with a combined capacity of handling ten million pounds of tobacco per week. There are five rehandling plants with a combined capacity of two million pounds per week located in the city.

At Lexington are located the railroad shops of the Lexington and Eastern Railway Company, the division repair shops of the Chesapeake and Ohio Railway Company, and the division terminal yards and shops of the Louisville and Nashville and Southern Railways.

Lexington gets her water supply from artificial lakes, the water-shed covering some fifteen hundred acres. The supply is adequate and the water pure and wholesome. Several of the manufacturing concerns get their supply from driven wells at very moderate cost.

At Lexington is located the office of the Collector of Internal Revenue of the Seventh District of Kentucky. The collections of this office amount to more than three million dollars per year. About ninety-eight per cent. of these collections are for taxes upon spirituous liquors.

Lexington has the greatest burley tobacco market in the world. Twenty-one million pounds of burley tobacco were sold on the Lexington loose leaf market during the season of 1909 and 1910. The pay rolls of this market amounted to $10,000 per week for the season of five months. The facilities of the market are greatly increased this year.

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Dairymen.

Ky. A. & M. Exp. Sta. No. 1	University of Kentucky
J. T. Case & Son	Frankfort Pike (3 mile)
Jno. A. Brand	Todds Road
W. C. Goodloe	Lexington
F. A. Atkins	Versailles Pike
R. B. Parker	Maysville Pike
R. D. Collins	Nicol Pike
McGovern Bros.	Todds Road
C. T. Downing	R. R. No. 7
H. C. Downing	Tates Creek Pike
M. G. Featherstone	R. R. No. 1
J. H. Morrow	Leestown Pike
Walter Watts	Frankfort Pike
Clarence Willson	R. R. No. 2
L Green	
M. Wilson	R. R. No. 2
Elmendorf	Maysville Pike (J. B. Haggin)
Schooler Bros.	Leestown
Pat Sharkey	Leestown
R. C. Nave	Versailles Pike
G. R. Ballard	Richmond Pike
M. R. Perkins	Maysville Pike
B. P. White	Richmond Pike
Joe Woodward	New Liberty
W. H. Lewis	Sandersville
J. H. and S. L. McKenzie	at Wilson & Downing
Kelley Bros.	Tates Creek
C. Foster Helm	Winchester
C. E. Berry	Tates Creek Pike
David Cahill	Frankfort Pike
Field & Ford	Frankfort Pike
M. T. Trebble	Tates Creek
H. Milward Elliott	Versailles
H. H. Jackson	New Kearney
W. J. Fresh	Leestown
J. W. Clark	Tates Creek
L. D. Payne	Winchester
B. F. Riddell	Bryant Sta. P.
B. C. Green	Richmond

Number of acres of Timber Land	7,500
Number of acres of Cleared Land	183,702
Crops Grown Corn, Wheat, Oats, Tobacco, Hemp.	
Total value of property	
Total amount taxes paid	
Rate of taxation	
Average price of farm land, per acre	$85.00
Schools	49
Number of churches	55
Banks	15
Number of whites	50,000
Number of colored	8,000
There has been a new hotel built at a cost of $500,000.00.	
Thoroughbred saddle stallions, horses	105
Standard geldings	212
Thoroughbred mares	1,478

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Stallions of common stock	109
Geldings, common stock	3,791
Number of jacks	30
Number of jennies	54
Registered bulls	37
Registered calves	1,148
Common jacks	6,625

FLEMING COUNTY.

Fleming County is located in the northeastern part of the State and bounded as follows: On the north by Mason and Lewis, on the east by Lewis and Rowan, on the south by Rowan and Bath and on the west by Bath and Nicholas.

The county is composed of three classes or kinds of surface. In the north the surface is slightly undulating, in the eastern and central it is rolling and in the south and west it is hilly and very much broken. The soil of the county is of limestone formation and is very productive. All kinds of grasses grow well here and especially bluegrass and timothy. In this county corn, wheat, oats, rye and tobacco grow abundantly also, and fruit and garden truck grow well. There are a few flouring mills in the county, and also a few saw mills, but the chief industry of the county is farming.

The county is watered and drained by the Licking River and its tributaries.

There are two railroads running through the county giving the farmers a very good method of transportation. There is also a short piece of railroad in the county that is not being used at present.

The county has very good county roads, there being about 250 miles of macadam roads in the county and the remainder of the roads are dirt roads and need to be improved very badly.

Flemingsburg, the county seat of this county, is situated in the north central part of the county and is a flourishing little town. It has a population of about 1,400 people and has macadam streets. The town has two schools, seven churches and three banks.

The town needs more shops and factories to give employment to the laboring class of people, and the county is badly in need of better roads.

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FLOYD COUNTY.

Floyd County is located in the extreme eastern part of the State, and is one of the mountain counties. The surface is very irregular and broken. This county is in the heart of the mountainous section of the State and is very rich in the mineral deposits, the principal mineral being coal. There are several seams of this mineral in the hills of this county, and the whole county is underlaid with a fine strata of coal of fine quality. It is one of the great coal-producing counties of the State, and the industry bids fair to become a very valuable asset of that part of the State. This county was originally a very fine timbered county, but the best part of the timber has been cut away and marketed long ago. However, there are, in some parts of the county, some very fine tracts of timber yet standing.

The land is being rapidly brought up by corporate companies for the purpose of engaging in the coal mining business.

While this is a mountain county, still it has some very fine farming lands along the Big Sandy River and its tributaries, and the hill lands, some of them, are still fertile and bring very good crops. The principal crops raised in this county are corn, wheat, oats and hay. The chief of these, however, is corn. Very little attention is given to the raising of wheat, and not enough of it is raised here to supply the demand of the home consumption. Tobacco is not very extensively cultivated either. Though it grows well it is not given much attention.

The public roads of the county are very bad, there being no turnpikes or macadamized roads of any kind. The greatest needs of the county are better roads, and a better road system, and in order to get this it is necessary to have some legislation along these lines.

Prestonsburg, the county seat is located in the northeastern part of the county on the Big Sandy River and is the principal town of the county.

The progress in the last few years along school lines in this county have been great. There is a Baptist Institute in this county that is doing wonders along the lines of education. The county has 100 common schools and their attendance is good. There are also 45 churches, and a number of Sunday schools in the county which are well attended.

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FRANKLIN COUNTY.

Franklin County was formed in the year 1794 out of portions of Woodford, Mercer and Shelby Counties.

The county is of medium size. The present boundaries of this county take in about 212 square miles. Of this 212 square miles about 126,072 acres have been cleared and 10,096 acres of timber are still standing.

This timber comprises some of the best in the State, such as walnut, maple, cherry, oak, pine, hickory, etc.

The soil of Franklin County is clay loam underlaid with limestone. This soil is very good for the production of grains and the best grade of white burley tobacco. Practically the only difference between the soil of Franklin County and the noted "bluegrass" soil of the State is that the soil of Franklin County is more broken.

This county is situated nearly in the center of the State, and the Kentucky River runs through the central portion of the entire county for a distance of about 23 miles.

The county is well watered and drained by the Kentucky River, Elkhorn, Benson and Glen's Creeks. Elkhorn Creek is famous all over the piscatorial population of the United States as one of the greatest bass streams in existence.

Frankfort, the county seat, and also the capital of the State, is situated near the center of the county, and has a population of about 12,000 souls, and is 512 feet above the sea level. It is one of the most beautiful towns in the State. It is divided by the Kentucky River, and is entirely surrounded by hills that seem to rise straight up out of the ground.

Frankfort lies on both sides of the Kentucky River, has street car service, electric light and gas plant, good water station, two telephone systems, 7 banks, 7 white churches, 2 colored churches, 1 Christian Science temple and 1 Salvation Army home. Frankfort has many ways of access with the surrounding country through the C. & O. R. R., L. & N. R. R., L. & A. R. R., F. & C. R. R., Kentucky Highland R. R., Interurban cars to Lexington and also by means of packets plying up and down the Kentucky River.

Frankfort also possesses numerous factories, among these are the canning factory, glass factory, shoe, broom and overall factories, chair and furniture factories, and the famous Milam fishing reel is made here.

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Franklin County is one of the largest whiskey manufacturing counties in the State, and some of the largest distilleries in the world are situated here, namely: Old Taylor, Old Crow, O. F. C., and Hermitage. In all, this county has some eight or ten distilleries in it. Factories coming to Frankfort are immune from taxes for a period of five years.

In that portion of Frankfort on the south side of the Kentucky River is located the beautiful and magnificent new State Capitol, situated on a knoll overlooking practically the entire town.

Frankfort contains many places and points of historical interest, among which are, the house in which Aaron Burr was tried for treason; the house in which Gen. Lafayette spent the night while in Frankfort; the old State Capitol buildings; State Arsenal, Daniel Boone's and the State monument in the cemetery overlooking the town; the house that is written of in Mary J. Holmes' novel, "Lena Rivers," and if one cares to climb to the top of Fort Hill (a very rugged hill rising several hundred feet above the town), he will be very well rewarded, not only with the beautiful view of Frankfort and the Kentucky River, but by the ruins of the old forts that were on this hill during the Civil War.

And last but not least among the places of historical interest found in Frankfort, is the fine collection in the rooms of the Kentucky State Historical Society in the southwest corner of the New Capitol building.

Franklin County is in the 7th Congressional District, 14th Judicial District, 5th Appellate District, 20th Senatorial District and 56th Legislative District.

FULTON COUNTY.

Fulton county is located in the extreme southwest corner of the State on the Mississippi River.

The surface of this county is very low and generally level, there being only a very few hills in the county, and they are only small elevations and more of an undulation than a hill.

The soil of the county is formed from the silt settlings of the Gulf of Mexico and the Mississippi River when the territory was covered with water. The soil is very rich and productive, producing in abundance the crops common to this section of the country. Cotton is raised in this county

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in abundance, and is one of the leading industries of the county. Corn, oats, hay, tobacco and garden vegetables are also grown to success in this county.

Hickman, the county seat of the county, is located in the northern part of the county, and has about 4,500 inhabitants, has a wagon factory, cotton gin, cotton seed oil mill and one of the largest lumber mills and box factories in the State.

Fulton is the next town in importance in the county.

This county has four railroads running through it, besides being bounded on almost three sides by the Mississippi River, thus giving the farmers almost ready market for all their farm products.

The town of Hickman needs more factories and shops to give employment to the laboring class of her citizens.

GALLATIN COUNTY.

Gallatin County is situated in the northern part of the State in what is known as the great bend of the Ohio River about midway between Louisville and Cincinnati. The surface of this county is very irregular and hilly except in the valleys, or river bottoms. Though the surface is rough, it is very productive and brings fine yields of crops of corn, wheat, oats, hay and tobacco in the uplands, and the bottom lands are very fertile and produce an abundance of vegetables and fruits, a great deal more than is consumed by the domestic consumption, and is shipped into the markets of Louisville and Cincinnati for market. This is an agricultural county, and farming is the chief occupation and industry. Although there is some coal, and a small amount of tiling clay and lead, neither has been worked to any degree of success or marketable advantage. The timber of this county is almost completely gone, there being only a few acres left in the county.

There are a great many miles of turnpike in this county, and only a small number of miles of dirt road. The Louisville & Nashville railroad runs through the county, and this together with the Ohio River gives the farmers good shipping facilities for their products.

Warsaw, the county seat, is situated in the northern part of the county on the Ohio River, has gravel streets, lighted with gasoline, has about 1,200 people, has eleven

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churches, two graded schools, one furniture factory and one flouring mill.

GARRARD COUNTY.

Garrard County is located near the central part of the State. The county seat of the county is within a few miles of the geographical center of the State. The surface of the county is broken. It is not very rough, but it has many low hills and the surface is rolling.

The soil is of a lime formation and is very fertile. Farming is the chief industry, and the principal crops are wheat, hemp, corn, oats, hay and tobacco. These crops are raised very extensively, and the yield is very satisfying to the farmer. Much attention is given to the raising of stock, such as fine horses, cattle, hogs, sheep, etc. These are raised to considerable extent and shipped to the big markets, and many cattle and sheep are exported to the foreign markets.

This county is drained by the Kentucky River which flows along the northern border and divides Garrard and Jessamine Counties.

Lancaster, the county seat of the county, is located in the southwestern part of the county on the Kentucky Central Division of the Louisville & Nashville Railroad, and has a population of about 2,500 people. The city also has seven churches, two schools and three good banks and a good water works system, which belongs to the city.

Much attention is given to the breeding of fine horses in this county, and there are at least twelve or fifteen men who follow this very extensively.

The county has some good turnpikes and other good roads.

GRANT COUNTY.

Grant County is located in the northern part of the State about twenty miles from the Ohio line.

The surface of the county is very irregular and broken by low hills. Farming is the chief industry of the county. The soil is of clay and lime formation and is very fertile.

The chief crops raised are corn, wheat, oats, hay and tobacco. Most all the products are consumed at home save that of the tobacco, which is shipped. The yield of tobacco of this county is not so great as that of some of the tobacco-

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producing counties, but the quality is exceedingly fine, making it a very valuable commodity to the farmer.

There are no minerals in the county, or so far none have been discovered, and it is wholly a farming and stock-raising county. Much attention is given to the raising of stock. Many horses, cattle, sheep and hogs are raised in this county.

There are about 500 miles of good turn pike in the county and they are kept in fairly good condition by the county tax system and free labor. There are only about 100 miles of dirt road in the county. It is also kept up by free labor system and county tax system.

Very little attention is given to the common free schools, but there is being more interest taken in them than formerly.

Williamstown, the county seat, is located on the Q. & C. railroad near the center of the county and has about 1,400 people.

GRAVES COUNTY.

Graves County is located in the western part of the State and was originally a part of Hickman. It was made a separate county in the year 1823.

The surface of this county is, generally speaking, level or undulating and the soil is a dark sandy loam on a clay foundation, and is very productive, especially for corn, hay and tobacco crops.

Farming is the chief industry of this county, the principal crops being tobacco, corn, hay, oats and wheat and vegetables. Fruit is also an important product of the county.

Much attention is given also to the raising of live stock; the total value of live stock in the county is nearly two millions of dollars.

Mayfield, the county seat, is located near the center of the county on the I. C. R. R. and is a thriving town of about 8,000 people. Wingo, Watervalley and Pryorsburg are also growing towns of the county.

Graves County has 118 common schools, with about 9,500 children of school age, has 80 churches and 10 banks.

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GRAYSON COUNTY.

Grayson County is located west of the central part of the State.

Rough River on the north, Nolin River on the southeast and Bear Creek in the central part of the county afford ample shipping facilities for the shipping of the timber from the county, which is usually done by water. The timber is a valuable asset of the county and is mostly poplar, oak, ash and walnut. Timbering is one of the chief industries of the county. The Illinois Central railroad also runs through the county and it, together with the three streams mentioned, give the county fine shipping facilities.

The soil of this county is very light and the surface of the county is very much broken. The principal crops are corn, wheat, oats, hay and tobacco. The soil of the county is so thin that it is necessary to use a great deal of fertilizer, and it is used with gratifying results. Along the rivers of the county there is some very fine land, as good as is in the State, but the quantity is limited to the river bottoms.

Leitchfield is the county seat and is located near the center of the county on the I. C. Railroad. The town has a population of about 1,300 people, is a thriving little town and has grown rapidly; has good schools, good banks and is a promising town.

There is in this county some very fine deposits of asphalt which bid fair to become a very important asset to the owners.

There are 96 common schools in the county, 65 churches, six banks and 4,700 children in school age.

Grayson County has a road tax system and the greatest need of the county is better roads and a better road law.

GREEN COUNTY.

Green county is situated near the central part of the State and is bounded as follows: On the north by Taylor and Larue, on the east by Taylor and Adair, on the south by Adair and Metcalf and on the east by Hart.

The surface of the county of Green is, generally speaking, undulating or rolling and the soil is based on a red clay foundation, and is reasonably fertile, and in the river bottoms and along the larger creeks of the county the soil is

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very fertile. Farming is the chief industry in the county, and the principal crops are corn, wheat, oats, hay and tobacco. There are no more of any of the products raised in the county than are consumed at home except that of tobacco which is the chief article of export from the county, and is a source of good revenue to the growers. The county produces a good number of horses and mules of common stock, and some considerable attention is given to that industry.

There is some ore in the western part of the county, and in the southwestern part of the county there is an onyx quarry from which have been taken some very fine specimens of the stone.

The timber of the county is mostly gone, i. e., the best part of it.

The roads of this county are the old-fashioned dirt roads, and are kept up by the old tax system and free labor. The citizens are very anxious for better roads and a better road law.

Greensburg, the county seat of the county, is located in the eastern part of the county on the banks of the Green River, and the terminus of the Greensburg branch of the L. & N. R. R. It has a population of about 850 people, has four churches, one library, one graded school, two banks, two flour mills and two saw mills.

GREENUP COUNTY.

Greenup County is located in the extreme northern part of the State, and is bounded on the north by the Ohio River, on the east by the Ohio River and Boyd County, on the south by Carter and Boyd Counties, and on the west by Carter and Lewis Counties.

The soil of Greenup County is a mixture of clay, sand and limestone, and is fairly good for farming purposes and especially in the river valleys and along the creeks.

The county is drained by the Ohio, Little Sandy and Tigart's Rivers and some good-sized creeks, and along these the land is very fertile.

Farming is the chief industry in this county and the farmers are raising more stuff than they use, thus giving them a very good export of farm products. The chief crops are corn, oats, wheat, hay and tobacco.

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There is very little timber left in this county. Like most of the other counties of this section of the State the timber has been cut and marketed. There is some considerable amount of coal found in the county, both bituminous and cannel, and of a very good quality.

The county has two railroads running through it and with the Ohio river bordering it gives it fine shipping facilities for the farmers.

Greenup, the county seat, is situated on the banks of the Ohio River, in the extreme northern part of the State, and is a flourishing little town. Greenup has a number of good churches, good schools, banks and seems to be in a flourishing condition.

The county needs better roads and manufacturing industries.

HANCOCK COUNTY.

Hancock County is located in the Northwestern part of the State on the Ohio River and is bounded as follows: On the north by the Ohio River, on the East by the Ohio River and Breckinridge County, on the south by Daviess and Ohio Counties and on the west by Daviess County and the Ohio River.

The Ohio River bottoms and the other river and creek bottoms which comprise about one-third of the area of the county is a formation of clay and sand and are very rich and well adapted to the growth of corn, wheat, oats, hay, vegetables and tobacco. The remainder of the county is hilly and broken, the surface being very irregular. The soil of this portion of the county is clay and dark sand, and is fairly well adapted to the raising of farm products, and is really better for the growing of tobacco and larger fruits than the rich bottom lands along the river, though the river land is better for raising of vegetables.

The greater part of the county is underlaid with bituminous coal, while the fine cannel coal mines are in the eastern part of the county. Fire and Potter's clay are found underlaying the coal in the county, and also in other sections of the county, and is of a fine quality. There is also a red sandstone found in the county that is very valuable. Graphite and oil are also found in the county to some extent, but have never been developed.

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Diversified farming is receiving much attention in this county and the farmers are improving their lands very materially by the rotation method of crops.

There is very little timber in the county.

Hancock County has no piked roads of any kind and the greatest needs of the county are better roads, and in order to get them there must be better road laws enacted.

The county has one railroad running through it, and together with the Ohio River gives good shipping facilities.

Hawesville is the county seat and has a population of about 1,400.

HARDIN COUNTY.

Hardin County is located in the north central part of the State and bounded as follows: On the north by Meade and Bullitt, on the east by Nelson and Larue, on the south by Larue and Grayson and on the east by Breckinridge.

Agriculture, stock raising and growing of fruits are the chief industries of the county. The Muldraus Hills run through this county and it is on the slopes of the famous hills that the soil is so well adapted to the raising of fruit. Peaches, apples, pears and grapes grow here in abundance and the quality is very fine, and in the city markets bring the very best prices.

This county is one of the foremost in the State in the ranks of stock raising, and especially that of fine mules. The annual export of mules is about $500,000. Cattle and horses are also an important feature among the farmers of this county.

The Nolin River Valley is one of the most fertile spots in Kentucky, and the soil here produces about 25 bushels of wheat per acre.

Elizabethtown is the county seat and has a population of more than three thousand people.

The financial condition of this county is among the best in the State. It has good schools, good churches, and is an up-to-date county.

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HARLAN COUNTY.

Harlan County is located in the extreme southeastern part of the State and is one of the most mountainous counties in the State.

Harlan County is bounded on the north by Leslie and Letcher, on the east by Virginia, on the south by Virginia and on the east by Bell and Leslie Counties.

The surface of Harlan County is very irregular and broken. In this county are the Little Black, Big Black and Pine Mountains which render it very mountainous. Practically all the county is underlaid with very rich veins of fine coal, and Harlan county is known as the heart of the coal fields of Kentucky. There are also several tracts of the finest timber in the State located in this county, and a good portion of the county is covered with dense forests of fine timber. The principal timbers are the oak, poplar, walnut, pine, hemlock and beech.

Three branches of the Cumberland river run through this county thus giving it an abundant water supply, and if developed would give it a wonderful water power. There is some very beautiful mountain scenery in this county. Along the rivers the land is very fertile and the bottoms are broad and in a high state of cultivation, thus Harlan can be called an agricultural county as well as one of the foremost counties in the State for fine coal and timber.

The chief wealth of the county is in its coal deposits, which are just being developed. The Louisville & Nashville Railroad Company is now building a line of railroad through the county, and there are numbers of coal mines being opened up, and within the next two years this will be the greatest coal producing county in the State.

The county roads of this county, like most of the other mountain counties, are very bad, and the greatest needs of the citizens are better roads. The county also is in need of manufacturing plants to give employment to the laboring class of people.

Harlantown, the county seat, is located in the western part of the county on the Cumberland River, and is to be the chief railroad town of the county when the railroad is completed.

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HARRISON COUNTY.

Harrison County was taken from parts of Scott and Bourbon counties in 1793, and named in honor of Colonel Benj. Harrison, who was at that time a representative from Bourbon County in the Kentucky Legislature; he was also representative from Bourbon County in the conventions held at Danville prior to the State's admission into the Union and a member of Kentucky's first Constitutional Convention, from the original territory of Harrison county. Portions have been taken to help form Campbell, Pendleton and Boone Counties; also Owen, Grant, Kenton and Robertson. It is situated in the north central part of the State and is bounded on the north by Pendleton county, northeast by Bracken and Robertson, east by Nicholas, south by Bourbon, west by Scott and northwest by Grant county. The main Licking River runs through the northeast corner of the county, cutting off a small part of the county known as Little Harrison. Both forks of Licking River flow through the county and with their many tributaries furnish the county with an abundant supply of water. About one-half of the county is hilly and somewhat broken, yet produces fairly well. The other half gently undulating, fertile and very productive. The soil consists principally of red clay and limestone; in the southwestern part of the county is found a blue limestone formation which is traversed with veins containing sulphur of lead and sulphate of barytes. There has also been found in the county some iron ore, lead and copper, but not in paying quantities.

There are three hundred and eighty-three miles of turnpike roads in the county and about three hundred miles of dirt roads.

There remains about one thousand, five hundred and forty-three acres of woodland in the county, but it has been culled over until it is of little value. Corn, hay and tobacco seem to be the staples of the farm while fruit growing, dairying and truck farming are receiving some attention.

There are two systems of railroad in the county, the L. & N. 21.22 miles and the Cincinnati Southern 2.43 miles, in all 23.65 miles.

Harrison county has many acres of good grazing land, making stock raising very profitable, especially cattle and sheep.

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Cynthiana, the county seat, was established in 1793; it was named in honor of Cynthia and Anna, the two daughters of Robert Harrison. It is situated on South Licking River, thirty miles from Lexington and sixty miles from Cincinnati. It has a population of four thousand and five hundred. It is situated on the Lexington & Cincinnati branch of the L. & N. railroad and a little south of the center of the county. It has nine churches, all denominations, a good hospital, seven schools and three banks. Cynthiana owns and operates its water works, which is a very fine system. It also has two flour mills, an ice plant, three distilleries, three carriage and wagon factories and a steam laundry.

The streets are macadamized and are in fine condition and are lighted by electricity, practically all sidewalks being made of concrete.

One of the best building and loan associations in the State is operated in Cynthiana.

Postoffices: Berry, Boyd, Lair, Breckinridge, Claysville, Colville, Cynthiana, Leesburg, Poindexter, Robinson, Shadynook, Sunrise, Sylvandell.

DAIRYMEN.

NAME	ADDRESS	NO. OF COWS
F. F. Reynolds	Cynthiana	20
M. W. Cox	Cynthiana	20
Mrs. D. C. Patterson	Cynthiana	10
Z. W. Lee	Cynthiana	12
Harrison County Infirmary	Cynthiana	8

HART COUNTY.

Hart County is located in the west central part of the State. The soil of the county is mostly of limestone formation, and is very fertile, and the chief crops raised here are corn, wheat, oats, hay and tobacco. The county is noted for the quality of tobacco raised. It is also a very fine fruit county.

There are two rivers and one railroad passing through this county the Green and Nolin Rivers, but neither of them are navigable. The Louisville & Nashville Railroad passes through the county about the center.

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There are in this county, still standing, a considerable amount of timber, such as oak, poplar, walnut, hickory, ash and cherry. There is also found in this county a fine vein of iron ore, and an excellent quality of white limestone and onyx marble is found in abundance in this county. In the low river bottoms there is to be found the celebrated St. Louis limestone.

This county has several natural attractions, among which is a spring near Munfordsville which ebbs and flows with the same regularity as the ocean tide, twice each day.

The county has plenty of good schools, both common and private, good churches, and is in a thriving condition.

Munfordsville is the county seat, is located on the Green River, 73 miles from Louisville, and has a population of about 900 people.

HENDERSON COUNTY.

Henderson County was formed in 1797 out of part of Christian County and was named in honor of Richard Henderson, an emigrant from North Carolina, who settled in the territory now comprising Henderson County, and who purchased large tracts of land from the Indians, and also received some large grants of land for the release of the tracts purchased from the Indians.

It is situated in the northern border of the western part of the State and is bounded on the north by the Ohio river for a distance of about seventy miles; on the east by Daviess County; on the south by Webster and McLean Counties and on the west by Union County. The Western half of the county is drained by Pond and Canoe Creeks and their tributaries, and the Eastern half by Green river and its tributaries.

The surface of the county is usually flat and underlaid with bituminous coal in great abundance. The soil is alluvial deposits of fine sand and black loam; very rich and productive. Corn, wheat and tobacco are the staples of the farm and are produced in great abundance. Henderson County is in the stemming tobacco district, and one of the leading counties in the production of that type of tobacco. It is also a good producer of corn and wheat, as well as vegetables and fruits. Both large and small mining and farming are the principal industries of the county.

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Baskett, a small town a few miles east from Henderson, is a great coal mining center, and just above the mouth of Green River is situated one of the largest bituminous mines in Western Kentucky.

Henderson County has sixty-four (64) miles of macadam roads, and six hundred (600) miles of dirt roads, which are built and kept up by a system of taxation and contract labor. The schools of this county are only fair, but have been greatly stimulated by the new school law and bid fair to became very efficient in the near future.

There is 54.21 miles of railroad in the county; the Louisville, Henderson & St. Louis, 17.55; the Louisville & Nashville, 20.39 miles, and the Chicago, St. Louis & New Orleans, 16.27 miles.

Henderson, the county seat of Henderson County, is situated in the north central part of the county, and on the Ohio river, and also on the three railroads above mentioned. It has a population of fifteen thousand (15,000); has macadam and gravel streets, electric lights and water and gas works, both owned by city. Henderson is quite a flourishing city. Its citizens are very energetic and industrious; are enjoying many of the modern conveniences belonging to cities of its class. It has a good street railway system; eighteen (18) churches; a number of good schools; libraries and hospitals; seven (7) banks, one cotton factory, three (3) buggy factories, three (3) coal mines and other factories as follows: One wagon, one chair, one desk, one furniture, one barrel, one broom, one brewery, one distillery, three cigar and two tile factories, two brick plants, seventeen (17) tobacco warehouses, city buildings, worth fifty thousand ($50,000) dollars, owned by city; two fire stations, one Young Men's Christian Association, Government Building, Elks Home, one manual training school, Commercial Club, and a very pleasant, genial gentleman for mayor.

Henderson County, situated on the Ohio River, contains approximately two hundred sixty-five thousand (265,000) acres. Extensive bottoms occur along the Ohio and Green Rivers, and much of the middle part of the county is level and swampy in places. Probably two-thirds of the county consists of upland with a sandstone soil, the greater part of which is cleared and in cultivation.

Transportation facilities are good. Both of the large rivers are navigable and form an outlet for the greater part

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of the timber products of the county. Three railroads cross the county in different directions, intersecting at Henderson, the county seat. The wagon roads, which are in excellent condition, are supported by taxation. Twenty per cent. of the total county tax is appropriated for dirt roads and bridges, and a similar amount for the construction and maintenance of pikes. Six miles of new macadam road are made each year.

Coal mining is carried on over the greater part of the county, and the timber used is largely bought from farmers. The forest land in Henderson County is now largely confined to extensive bottoms. Much of it has been considered too wet to clear and has, in many seasons, been too wet to log. But with the rise in value of both timber and land, this bottomland forest is rapidly being cleared of the greater part of the merchantable timber and ditched. Some small areas of upland woodlots have some fine timber still left standing, but these are cases where the owners have refused to sell. The majority of woodlots have been severely culled, for the most part from bottomlands that will eventually be cleared.

Henderson is one of the few counties in this district that has adopted the stock law. Stock are not allowed to run at large, and everyone has to take care of his own animals. The farmers seem very well satisfied with this arrangement.

Owing to the lack of durable timber for posts, many farm fences are in bad condition. Scrub oak, which lasts only a few years, has generally been used for this purpose. There is much land, especially in the southern part of the county, where locusts could be grown with profit, and the production of durable fence posts seems to be one of the chief timber needs of the county.

There are approximately eleven thousand (11,000) acres of timber and two hundred sixty-one thousand, five hundred and four (261,504) acres of cleared land in the county.

HENRY COUNTY.

Henry county was formed out of Shelby in 1798. It is located in the bluegrass section of Kentucky and is one of the counties of the famous Ashland district. It contains over 170,000 acres of land. It is bounded on the north by the Ohio river bottoms and productive fruit sections of Car-

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roll and Trimble counties, on the east by the Kentucky river, which is navigable all the year round, on the south by Shelby county, on the west by Oldham county.

The lands in Henry county, except along the river front are undulating just enough to drain properly. The soil produces corn, wheat, burley tobacco, red clover, bluegrass, timothy, and orchard grass.

The county has much timber, consisting of yellow poplar, black walnut, ash, white and red oak, beech and mulberry. The land is limestone formation and is especially adapted to the raising of the crops mentioned, as well as alfalfa. The Little Kentucky river winds through her western border. The county is noted for its adaptability in the matter of fruit culture, growing in abundance apples, peaches, pears and other fruit proper to a temperate climate.

Henry county was the home of many distinguished men: Humphrey Marshall, William S. Pryor, Judge Geo. Drane, Jno. D. Carroll and others.

The county has eleven banks and seven cities of the fifth and sixth classes. Newcastle is the county seat, with a population of 1,000. Eminence is the metropolis with a population of 2,000, situated in the crown hill of four streams of water, Clear creek, Fox Run, Drennon and Little Kentucky, and it is the highest point between Louisville and Lexington. It is a very progressive little city, having electric lights, water plants, brick streets, churches, schools, flour mills, distilleries, etc. In Henry county is the famous Drennon Springs, which was discovered in the early history of the State. It was a famous watering place for Southern people before the war and was at one time the home of James G. Blaine, and prior to that Henry Clay frequently visited there. There are several lead mines now in active operation in the county. The educational system is as good as can be obtained. Graded schools are taking the place of common schools. The Louisville & Nashville short line to Cincinnati runs through the western portion of the county, while the eastern section is furnished with a natural line of transportation by the Kentucky river, even at low stages of water, carrying lumber, tobacco, corn, wheat and other products to the markets of the world. There are two locks and dams in Henry county.

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The county seat is New Castle, one of the oldest towns in the State. The county has built a fine courthouse. It is an important town and does a good business. Besides New Castle and Eminence there are Smithfield, Pendleton, Sulphur, Campbellsburg, Turners, Port Royal and others.

Henry county is in the 7th congressional, 5th appellate, 12th judicial, 21st senatorial and 44th legislative districts.

HICKMAN COUNTY.

Hickman county was formed in the year 1821 out of part of Caldwell and Livingston counties.

It is located in the extreme southwestern part of the State on the Mississippi river.

The soil of this county is of a dark rich alluvial nature and produces fine crops of corn, wheat, hay, tobacco, alfalfa and cotton.

Stock raising receives much attention in the county and the livestock of the county is listed at more than a half million dollars.

Clinton is the county seat and is located near the center of the county on the I. C. railroad. It is a thriving little town, and good commercial center for the county.

The county has 43 common schools, with 3,675 pupil children. It also has 45 churches and 3 banks.

The roads of this county, like a great many others in the State, are not what they should be, and not what they could be made if the good roads law was in effect. The citizens are very anxious to get some relief along these lines, so they can improve their roads.

The county needs some shops and factories to give employment to the unemployed.

HOPKINS COUNTY.

Hopkins county is located in the western part of the State and is bounded as follows: On the north by Webster and McLean counties, on the east by Muhlenberg, on the south by Caldwell and Christian, and on the west by Crittenden.

This is one of the large wealthy counties of the State. While the county has a great many coal mines in it, farming is the principal industry. The soil of this county is of two

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kinds, a light clay and sand, and in the lower lands is a dark sandy loam, and is very productive, and fine crops of corn, wheat, hay and tobacco are raised here.

The coal mining interests of the county are very extensive, and the mines are in a high state of operation, and the coal territory in this county is all being developed very rapidly.

Madisonville, the county seat, is located on the L. & N. R. R. and is near the center of the county.

Earlington is the next town in size and importance and is located in the coal mining region of the county, and is a fine market for the farmers to market their produce.

Dawson Springs is located in this county and is a fine summer resort, and has a fine medicated spring.

The county needs better roads and more factories.

JACKSON COUNTY.

Jackson county is located in the southeastern part of the State. The surface of the county is very irregular, though the county is not very mountainous, but is composed of a high rolling table land and low rolling hills.

The soil of this county is diversified as to kinds of formation. In the northern part of the county it is of a lime formation, while in the eastern and southern part of the county the soil is a mixture of clay and sandstone. While the soil of this county is not very fertile, the farmers make enough stuff to supply the demand of domestic trade.

Farming is the chief industry of this county, and the the chief crops grown are corn, oats and hay, while some attention is given to the raising of vegetables and sorghum.

Almost the whole of the county is underlaid with good grades of bituminous coal, but it is not being mined, except for domestic uses there in the county, as there are no railroads in the county by which to ship it out.

McKee, the county seat, is located near the center of the county and is a town of about 500 people, good churches, schools and a good bank. The chief industry of the county seat is merchandising.

The county has a bad system of county roads and needs better roads in the county, and railroads over which to ship their coal and timber.

A good portion of Jackson county is covered with a very fine growth of timber, the principal of which is pine and oak.

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JEFFERSON COUNTY.

Jefferson, Fayette and Lincoln were the three original counties which composed the district of Kentucky County. Jefferson County was formed out of part of Kentucky County in May, 1780, by the Virginia Legislature and named in honor of Thomas Jefferson, then Governor of the State, but more widely known as the author of the Declaration of Independence and third President of the United States. It then embraced that part of the south side of the Kentucky river which lies west and north of a line beginning at the mouth of Benson's Creek and running up the same to the head; thence south to the nearest waters of Hammond Creek and down the same to its junction with the Town Fork of Salt River; thence south to Green River, and down the same to its junction with the Ohio River. As now reduced in size by the formation of twenty-eight other counties and parts of counties out of its original territory, Jefferson County is situated in the northwest middle part of the State and bounded on the north by Oldham County and the Ohio River, on the east by Shelby, on the south by Spencer and Bullitt Counties and on the west by the Ohio River.

Kentucky County comprising the original counties of Jefferson, Lincoln and Fayette, was formed out of Fincastle County, Virginia, in 1776. Fincastle County disappeared when Kentucky County was carved out of it and after the forming of Jefferson, Lincoln and Fayette, Kentucky County also passed out of existence. Neither the name Fincastle or Kentucky has been preserved or retained as the name of any county, either in Virginia or Kentucky. However, when Kentucky became an independent State in 1792, embracing the original territory of Kentucky County, it resumed its former name "Kentucky."

The Ohio River in a beautiful curve borders half the northern and the entire western portion of the county. The county is watered by Beargrass Creek, the most noted in the early history of the State, which enters the Ohio through the city of Louisville, and by Pond's and Floyd's Creeks, the latter emptying its waters into Salt River. The middle and western part of the county, including the city of Louisville, is almost an unbroken level plane, rich and productive, while the eastern portion is hilly or undulating and not so fertile as the bottoms, yet it produces well. On account of

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the great impetus given to the industry on account of the easy access to the market, the ready sales and high prices furnished by the city of Louisville for their products, almost the entire county is engaged in truck farming, dairying and fruit growing. In this business have many of the Jefferson County farmers grown rich.

Jefferson County has some of the oldest towns in the State, Campbelltown, incorporated in 1785; name changed in 1806 to Shippingport and by that name incorporated in 1829, now a part of Louisville. Portland, on the Ohio River, below the mouth of the canal, was laid off in 1814 and incorporated in 1834, also now a part of Louisville. Newtown was incorporated in 1794, afterwards called Jeffersontown. Middletown, settled some years before, but not incorporated until 1801; Anchorage, a beautiful village twelve miles east of Louisville, on the railroads to Cincinnati and Lexington, is the seat of Bellwood Female Seminary and nearby is the celebrated Forest Academy, now known as the Kentucky Military Institute. There are other villages in the county too numerous to mention.

In Jefferson County are to be seen numerous relics of the pioneer days. At Mulberry Hill stand double two-story log houses built in 1784 by John Clark, the father of Gen. George Rogers Clark, and at Locust Grove, on the Ohio River, can be seen the old-style brick mansion built by Col. William Croghan in 1790. In the family graveyard here rested the remains of Gen. Clark from 1818 to 1869, when they were removed to Cave Hill Cemetery. On Beargrass Creek are the sites of six original forts: Spring, Floyd's, Dutch, Sturgis, Sullivan's and Linn's. These are the forts which sheltered so many of the pioneers and their families from the Indians and where lie in unknown graves the remains of many men and women who helped lay the foundation of the great State of Kentucky. On the bank of Long Run stood Hughes' Station, where the grandfather of President Lincoln was killed in 1788, and on the same stream was routed the little army of Col. Floyd, who went to the relief of Boone's Station in 1781. On Chenoweth's Run yet stands the stone spring house in which the survivors of the massacre of the Chenoweth family took refuge in 1739.

Jefferson County, when first organized, contained about five million acres. In less than four years after its forma-

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tion the Virginia and Kentucky Legislatures began carving it into counties and continued until eighteen new counties had been formed as follows: In 1784 Nelson; in 1792, Shelby, Washington and Hardin; in 1796, Bullitt; in 1798, Henry and Ohio; in 1799, Breckinridge; in 1810, Grayson; in 1815, Daviess; in 1823, Oldham and Meade; in 1824, Spencer; in 1829, Hancock; in 1834, Marion; in 1836, Trimble; in 1843, Larue; and Taylor in 1848. So there were eighteen new counties carved out of Jefferson with an aggregate territory of four million acres. Besides these eighteen new counties there were twelve other counties partly made from it, viz: Mercer, in 1785; Green, in 1792; Franklin, in 1794; Adair, in 1801; Casey, in 1806; Butler, in 1810; Hart, in 1819; Edmonson, in 1825; Anderson, in 1827; Carroll, in 1838; Boyle, in 1842, and McLean, in 1854, drawing on Jefferson again for over three quarters of a million acres, leaving Jefferson as it now stands with only about two hundred and twelve thousand, six hundred and seventy acres.

Jefferson County began its political existence on March the 7th, 1781, when its first County Court was held. Having no courthouse, the court was held in the old fort at the foot of Twefth street. There is no record of the names of the Justices who held this court. Richard Chenoweth was the Sheriff.

There was no great battles in this county between the whites and the Indians, as the latter always came in small companies, lurking around and firing on the whites from the cover of the underbrush. Many of the whites were killed in this way. In 1781, Col. William Linn, Capt. Abraham Tifton and Capt. John Chapman were killed by Indians in ambush; in 1783, Col. John Floyd was ambuscaded and slain; in 1784 Walker Daniel was killed in the same way; and in 1788, they killed the grandfather of President Lincoln. The situation became so serious that the citizens of Jefferson County entered into an organization offering a sum of money for the scalps of the Indians. The plan had its desired effect and the secret killings became a thing of the past.

Louisville, the county seat of Jefferson county, is situated in the west central part of the county on the east bank of and near the great falls of the Ohio river, and also at the original and natural juncture of that river with Beargrass creek, whose waters have been turned into a more direct

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channel at the upper part of the city. It is by water 589 miles below Pittsburg, 193 miles below Maysville, 132 miles below Cincinnati, 368 miles above Cairo, 607 miles above Memphis, 1,377 miles above New Orleans, 568 from St. Louis and 128 miles below Frankfort; and by rail 66 miles from Frankfort, 94 miles from Lexington, from Nashville 185 miles, from Memphis 377, from St. Louis 274, and from Cincinnati 110 miles. It has a river frontage of several miles. It is on an elevated plain, 70 feet above the low water mark in the Ohio River and 25 feet above the highest flood mark. It is regularly laid out on a plan similar to that of Philadelphia, the principal streets running parallel with the Ohio River and nearly due east and west, and the cross streets north and south. The width of the streets are 60 feet, except Main, Market and Jefferson, which are 90 feet, and Broadway which is 120 feet wide. Louisville was incorporated as a town in 1780 and as a city in 1828. Louisville was first laid out in August, 1773, by Capt. Thomas Bullitt, but no record of the plan or survey has been preserved. The Virginia Legislature passd an act in 1780 establishing the town of Louisville at the falls of the Ohio River. In 1780, it was laid out again by Wm. Pope and a new survey made by Wm. Peyton, assisted by Daniel Sullivan, who plotted out the lots. These surveys and plots have also disappeared. The only surveys and plots on record are those made in 1812, by Jared Brookes.

In the early history of Louisville lots 105 by 210 feet sold at from $700 to $1,400, but in 1812 the Branch Bank of Kentucky was established in Louisville. These same lots sold at from $4,000 to $5,000. The first brick house was built by Mr. Kaye in 1789 on the square where the courthouse now stands. In 1800 Louisville had a population of 600; in 1810 it had increased to 1,357. About two o'clock on the morning of December 16, 1811, the shock of a great earthquake was felt in Louisville, the excited citizens rushing into the streets; one of them was heard to exclaim, "O what a pity that so beautiful a world should be thus destroyed!"

The first paved street in Louisville was paved in 1812, when Main street was paved from Third to Sixth in compliance with an act of the Legislature requiring such paving. In 1819 the population had increased to more than four thousand.

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The first incorporated bank in Louisville was the branch bank of the Bank of Kentucky. The first ship reached Louisville June 16, 1800. And in October, 1811, the first steamboat reached Louisville. The first trading voyage past Louisville and over the falls was that of Colonel Richard Taylor and his brother, Hancock Taylor. In 1769, the first exploring party was one headed by Captain Thomas Bullitt, which landed above the mouth of Beargrass Creek on July the 8th, 1773. The first encampment of regular settlers was the families of Captain James Patton, Richard Chenoweth, John Tuel, William Troith, John Macmanus and others whose names have not been presented, settled on Corn Island in the spring of 1778.

The first white child born in Louisville was Captain John Donne. The first church was built in 1811, Catholic, the first Protestant church was Methodist, built in 1812. The first city school was erected 1829. The first daily paper, the Journal, was published in 1838, edited by George D. Prentice. The courthouse was built in 1811. The first foundry was established by Paul Skidmore in 1812. The Louisville Library Company was incorporated in 1816.

On June 29, 1850, in Louisville, Dr. N. B. Anderson delivered a colored woman of seven well-formed children, four girls and three boys.

Louisville was allowed separate representation in the House of Representatives in 1830, and James Guthrie was her first representative. Louisville has made wonderful progress; it has grown to be the metropolis of the State and the gateway between the two great sections of the country known as the north and the south. The many beautiful and modern residences in the southern part of the city, the modern sky scrapers in the business section, and her modern first class hotels, make Louisville a very attractive city. It has many miles of asphalt and granite streets equal to any to be found in the large cities of the north or east, and a great system of street railway; it also has water works and fire protection second to no city in the country. The city has 57 public schools, 33 parochial schools and seven academies, five for girls and two for males; one large library with five branches; thirteen hospitals, and a number of other institutions of charity. Louisville has foundries, factories and other industries too numerous to be mentioned; among

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them are the Old Hickory Wagon Works and Avery Plow Works, said to be the largest of their kind in the world.

Some Important Trade Facts About the City of Louisville.

The largest leaf tobacco market in the world. In quantity sold and value it is almost double the next greatest market. The average yearly sales amount to about $19,000,000. In manufactured tobacco it is the second market in the world. The number of pounds made and sold annually is about 80,000,000. The figures for 1910 were 76,247,635 pounds.

It is the largest market in the world for straight whiskies. The sales and shipments from Louisville annually are more than half a million barrels. The shipments for 1910 were 543,931 barrels.

In the making of fine flour Louisville is celebrated, several of the mills having daily output of from 1,000 to 3,000 barrels.

It is a great market for all kinds of hardware, one house alone doing an average annual business of more than $7,000,000.

In agricultural implements and farm wagons the city stands at the top of the trade in quality and amount of output.

It is a great and rapidly growing live stock market. The receipts for 1910 were: Cattle, 134,584 head; calves, 37,514 head; hogs, 718,696 head; sheep, 474,664 head.

It is the largest market in the country for oak-tanned sole leather.

For dry goods, shoes, drugs, furniture, packing house products, machinery, cotton oils, seeds, soap, stoves, grain, woodenware, groceries and woolen goods it ranks high as a market.

The trade annually in grain amounts to more than $18,000,000.

Jefferson County.

Jefferson County, outside of the city of Louisville, is the greatest agricultural county in the State in the variety of crops and value of annual product. The leading crops are wheat, corn, oats, hay, potatoes, onions, onion sets and

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seeds, fruit, cabbage, peas, beans, melons and all of the vegetables grown on truck farms.

Jefferson County is the largest potato producing county in the United States. The quantity shipped to other markets in 1910 amounted to more than 425,000 barrels. The onions shipped in 1910 amounted to more than 145,000 barrels. The shipment of apples in 1910 was about 85,000 barrels.

The county is growing rapidly in population. With the extension of the many electric railway lines and the building of high grade roads everywhere, suburban towns and settlements are springing up all over the county.

BREWERIES.—Fourteen breweries in Jefferson County use 440,979 bushels of barley malt and 44,780 bushels of corn —this includes common beer breweries.

BROOM MANUFACTURERS.—Broom manufacturers in Jefferson County use 617 tons of broom corn annually.

One of the leading industries of Jefferson County is the production of whiskey. There are twenty distilleries in the county consuming a total of 3,933,939 bushels of grain divided as follows: Corn, 2,850,538 bushels; rye, 660,338 bushels; barley malt, 418,063 bushels; wheat, 5,000 bushels.

FLOUR MILLS AND GRIST MILLS.—Two large flour mills in Jefferson County grind annually 4,650,000 bushels of wheat. Three grist mills grind annually 314,100 bushels of corn. one cereal mill grinds annually 939,000 bushels of corn.

PICKLES AND CONDIMENTS.—Manufacturers of these condiments use annually as follows: Cucumbers, 158,571 bushels; tomatoes, 243,571 bushels; onions, 11,000 bushels; cauliflower, 11,800 bushels; green peppers, 5,000 bushels; small melons 2,400 bushels; cabbage, 108,924 bushels; apples, 171,428 bushels; green beans, 1,500 bushels; dry navy beans, 8,000 bushels; dill weed, 25,000 pounds; mustard seed, 112,500 pounds.

VINEGAR MANUFACTURERS.—The manufacturers of vinegar and cider in Jefferson County used 27,292 bushels of apples in 1910, and could use double the amount if they could secure them.

MISCELLANEOUS.

1. **Number of acres of timber land.**
2. **Number of acres of cleared land, 212,698.**
3. **Total value of property for taxation, $199,467,925.**
4. **Total amount of taxes paid, $1,460,229.**
5. **Number of churches, 331.**

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6. Number of banks, 28.
7. Number of newspapers published in county, 23.
8. Number of whites, 235,000.
9. Number of colored, 68,000.
10. Value of livestock, $1,000,640.
11. Number of dogs, 4,432.
12. Number of miles of railroad in county, 232.61.
13. Principal industry—Manufacturing.
14. What industries are needed? Factories of all kinds.
15. What inducements are offered by county toward aiding new industries? Exemption from taxation for a period of five years.
16. Average price of farm labor—daily, $1.00; monthly, $25.00.
17. Is labor scarce or plentiful? Scarce.
18. What kinds of soil? Limestone and clay.
19. Value of agricultural implements, $51,425.

Railroads in Jefferson County.

B. & O.	2.82
C. & O.	6.10
Chicago, Indianapolis & Louisville	1.12
Cleveland, Chicago, Cincinnati & St. Louis	1.10
I. C. R. R.	36.80
K. & I.	11.26
L. & N.	44.46
Louisville, Henderson & St. Louis	21.
Penn. Terminal	3.46
Pittsburg, Cincinnati, Chicago & St. Louis	4.78
Southern Railway	23.32
Louisville & Interurban	60.
Louisville & Eastern	13.
Louisville & Southern Indiana	1.10
Louisville Bridge Company	2.29
	232.61

Dairymen.

C. R. Coates	Newburg Road, R. F. D. No. 10.
Edward Gyr	Newburg Road, R. F. D.
M. J. Bisig	Newburg Road, Buechel, R. F. D.
J. W. Greenwell	Preston St. Road.
Ben Grieve	Forks Preston and Shelby Sts.
Mrs. K. Greenwell	Forks Preston and Shelby Sts.
John Wittwer	Forks Preston and Shelby Sts.
Henry Hopke	Forks Preston and Shelby Sts.
Herman Diepholz	Forks Preston and Shelby Sts.
G. F. Gauman	Forks Preston and Shelby Sts.
F. Wittwer	Forks Preston and Shelby Sts.
B. M. Kaelin	Forks Preston and Shelby Sts.
Jos. Ehrler	Forks Preston and Shelby Sts.
Fred Wittwer	Forks Preston and Shelby Sts.
Mrs. Lou Jones	Bardstown Road.
J. L. Simcoe	Bardstown Road.
Dominick Kaelin	Bardstown Road.
A. Burkholter	Poplar Level Road.
M. McQuithy	Poplar Level Road.
Louis Kammar	Poplar Level Road.

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Phillip Dahl	Poplar Level Road.
A. Schoenbachler	Poplar Level Road.
Louis Liebert	Work House Road.
Steve Bisig	Work House Road.
Lawrence Liebert	Work House Road.
C. Kaelin	Brownsboro Road.
Conrad Heberlin	Brownsboro Road.
A. Kammer & Son	Brownsboro Road.
M. Ochsner	Spring St., Louisville.
J. H. Roehring	34th and Virginia Avenue, R. F. D. No. 22.
John Hanlon	42nd. and Greenwood Avenue, R. F. D. No. 22.
H. Harlammert	18th and Oak Sts., Louisville.
Frederick Schurch	Texas and Goss Avenue, Louisville.
M. Reichmuth	Rawlings St., Louisville.
Geo. Meiners	Rawlings St., Louisville.
J. F. Schott	25th and Ormsby Avenue, Louisville.
Ben Fischer	36th and Market Sts., Louisville.
Seewer Bros.	38th and Amy Sts., Louisville.
Fred Von Allmen Sons	36th and Bank Sts., Louisville.
E. Von Allmen	26th and Market Sts., Louisville.
Chris Moser	34th and Courtenay Sts., Louisville.
Schott Bros.	40th and Bank Sts., Louisville.
B. Reichmuth	Rawlings St., Louisville.
Andrew Flynn	Crescent Avenue, Louisville.
Chas. Oechsli	44th and Greenwood Avenue, R. F. D. No. 22.
Theo. Brumleve	Ash Bottom Road.
C. Merhoff's Sons	Ash Bottom Road.
R. O. Gathright	Gathright.
Samuel Henderson	Gathright.
Oehrle Bros.	Shively.
Henry Diersing	Shively.
Joe Stenger	Shively.
Echerle Bros.	Shively.
Mrs. Phil Thomas	Taylorsville Road.
S. E. Kennedy	Taylorsville Road.
Zach Zender	Taylorsville Road.
Louis Oechslin	Taylorsville Road.
C. Hahlen	R. F. D. No. 3.
Fred Wittwer	R. F. D.
Andy Kaelin	R. F. D. No. 1.
Henry Wirth	Buechel.
Z. Z. Carpenter	Jeffersontown.
J. C. Bowles	Jeffersontown.
J. J. Polk	Jeffersontown.
Sweenright Dairy Company	Jeffersontown.
Will Moser	Jeffersontown.
William Lamaster	Jeffersontown.
J. H. Maratta	Jeffersontown.
G. W. Tyler	Jeffersontown.
C. B. Stout	Jeffersontown.
William King	Jeffersontown.
D. Ryan	Jeffersontown.
J. H. Funk	Jeffersontown.
John Phillips	Jeffersontown.
B. Bidwell	Jeffersontown.
Warren Stout	Jeffersontown.
Mrs. E. Miller	Jeffersontown.
Miss E. C. Pound	Jeffersontown.

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Dr. Pound	Jeffersontown.
C. Ryan	Jeffersontown.
S. W. Wheeler	Jeffersontown.
T. Morton	Jeffersontown.
O. T. Carpenter	Jeffersontown.
R. S. Mills	Jeffersontown.
E. C. Potts	Jeffersontown.
W. B. Jones	Jeffersontown.
L. Kaelin	Jeffersontown.
J. T. Johnson	Jeffersontown.
John Bradbury	Jeffersontown.
S. F. Beard	Jeffersontown.
Lee Reid	Jeffersontown.
E. C. Goose	Jeffersontown.
C. B. Christian	Jeffersontown.
William Quisenberry	Jeffersontown.
J. D. Stockholf	Jeffersontown.
H. L. Goose	Jeffersontown.
L. O. Wings	Jeffersontown.
A. B. Dravo	Jeffersontown.
J. M. Bidwell	Jeffersontown.
J. B. Read	Jeffersontown.
E. C. Moody	Jeffersontown.
William Tucker	Jeffersontown.
Mrs. E. Bierman	Jeffersontown.
C. D. Tylee	Jeffersontown.
A. Fannells	Jeffersontown.
A. P. Miller	Jeffersontown.
J. H .Hite	Jeffersontown.
Roy Read	Jeffersontown.
P. M. King	Jeffersontown.
Mrs. J. Klinghouse	Jeffersontown.
L. Bryan	Jeffersontown.
Alix Potts	Jeffersontown.
J. N. Tylor	Jeffersontown.
Thos. Taylor	Jeffersontown.
H. Harris	Jeffersontown.
John Cochran	Eastwood.
G. C. Hall	Eastwood.
Will Cochran	Eastwood.
Omer Jones	Eastwood.
S. D. Pearce	Eastwood.
B. Melone	Eastwood.
T. B. Smith	Eastwood.
J. A. Beckley	Eastwood.
S. W. Duncan	Eastwood.
Beckley Bros.	Eastwood.
J. D. Melone	Eastwood.
J. S. Johnson	Eastwood.
E. B. Johnson	Eastwood.
C. B. Harris	Eastwood.
S. S. Derrett	Clark Station.
S. W. Carson	Clark Station.
W. P. Johnson	Clark Station.
M. M. Frazier	Clark Station.
T. L. Page	Clark Station.
C. E. Bryant	Clark Station.
Dr. E. L. Brunneman	Clark Station.

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T. W. Graves .....Clark Station.
W. B. Fairfax .....Clark Station.
J. E. Bryant .....Long Run Station.
J. G. Morris .....Long Run Station.
T. W. Graves .....Long Run Station.
T. L. Page .....Long Run Station.
D. T. Collier .....Long Run Station.
J. C. Frazier .....Long Run Station.
J. E. Justice .....Long Run Station.
Mrs. Hannah Lacy .....Long Run Station.
Tal. Pearce .....Long Run Station.
Mrs. R. C. Morehead .....Long Run Station.
B. Pearce .....Long Run Station
E. Bryant .....Long Run Station.
J. C. Bryant .....Long Run Station.
C. R. Sheens .....Avoca Station.
B. B. Ward .....Avoca Station.
R. R. G. Griffith .....Avoca Station.
J. D. Conn .....Avoca Station.
H. W. Collins .....Avoca Station.
Watkins & Collins .....Avoca Station.
Z. W. T. Pinnell .....O'Bannon Station.
E. J. Clore .....O'Bannon Station.
Chas. Holstner .....2621 West Main St.
Von Allmen .....Refused to have cows tested.
Chas. L. Witherbee .....Anchorage.
Mrs. Greenwell .....Anchorage.
Wm. Leonard .....Anchorage.
Mr. Silverthorn .....Anchorage.
C. H. Best .....Anchorage.
Clifton Conn .....Anchorage.
J. L. Shallcross .....Anchorage.
J. A. Poulter .....Anchorage.
C. Huettig .....Anchorage.
I. W. Bernheim .....Anchorage.
T. V. Beckley .....Anchorage.
W. T. Parks .....Anchorage.
F. D. Morton .....Fisherville.
J. W. Rhea .....Fisherville.
J. W. Wisehart .....Fisherville.
Edgar Wisehart .....Fisherville.
F. C. Lashwork .....Fisherville.
O. T. Carpenter .....Fisherville.
E. O. Burden .....Fisherville.
L. F. Curry .....Fisherville.
G. W. Wilson .....Highland Park.
Robert Montgomery .....Highland Park.
A. J. Owens .....Highland Park.
Rollie Thompson .....Highland Park.
F. M. Marcum .....Highland Park.
Will Cook .....Highland Park.
John Oss .....Highland Park.
Robert Puvius .....Highland Park.
J. M. Hopkins .....Highland Park.
N. W. Spaulding .....Highland Park.
F. M. Gough .....Highland Park.
W. M. Woods .....Highland Park.
H. T. Wiley .....Highland Park.

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James Specht .....Highland Park.
Downost & Hough .....Highland Park.
C. H. Wright .....Highland Park.
T. L. Cesna .....Highland Park.
W. Gilbert .....Highland Park.
J. M. Reynolds .....Highland Park.
Ben Pidgons .....Highland Park.

Dairymen and Number of Cows, Jefferson County Association.

Addresses Louisville and R. F. D. Routes.

	NO. COWS.
L. Lierbert, Louisville, Secretary	50
S. Bisig, Louisville	25
D. Zhender, Louisville	50
Ochsner Bros., Louisville	50
C. Kaelin, Louisville	35
J. Bisig, Louisville	50
C. Kamer, Louisville	30
E. Kaelin, Louisville	35
A. Kealin, Louisville	30
X. Schuler, Louisville	40
C. Haberlin, Louisville	20
Ed. Zender, Louisville	20
Z. Zender, Louisville	25
A. Fuchs, Louisville	50
M. Oschner, Louisville	30
Merhoff & Son, Louisville	90
T. Brumleve, Louisville	40
F. Schierick, Louisville	50
G. Gauman, Louisville	40
J. Ehrler, Louisville	40
J. Hallen, Louisville	25
W. Buser, Louisville	30
L. Kaelin, Louisville	35
F. Kaelin, Louisville	25
L. Lohnmueller, Louisville	30
F. Whittner, Louisville	30
J. Whittner, Louisville	30
H. Hopke, Louisville	20
S. Kaelin, Louisville	35
A. Shoenbaechler, Louisville	50
J. Kennedy, Louisville	30
O. Schaftlein, Louisville	40
H. Nemeir, Louisville	50
C. Moser, Louisville	30
Seever Bros., Louisville	35
A. Von Allmen, Louisville	90
C. Exley, Louisville	30
P. Ulrich, Louisville	40
Ed. Von Allmen, Louisville	25
D. Kaelin, Louisville	40
L. Kamber, Louisville	25
L. Kaelin, Louisville	30
L. Finley, Louisville	80

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This is the approximate number of cows owned by the dairymen given, living in Jefferson County by the Secretary of the Jefferson County Dairy Association.

Signed, L. LIERBERT.

A true Copy.
By W. H. STRANGE, Statistician.

LOUISVILLE, KENTUCKY: Its beginning and something of its past history, present statistics and characteristics.

In 1773, John Connelly located 2,000 acres, due him for military services, on the south side of the Ohio River, immediately opposite the falls. Thomas Bullitt was with him and made a survey and on December 10, 1773, Lord Dunmore executed the deed. Connelly then transferred 1,000 acres of this survey to John Campbell who had meanwhile arrived and they undertook to build the town which Bullitt had planned. Trouble arose between the colonies and Great Britain; and Connelly an English adherent was imprisoned by the patriots. The Indians captured Campbell and thus ended the first attempt of a settlement. In the Spring of 1778, Gen. George Rogers Clark sailed down the Ohio with raw recruits and immigrant families, found it necessary to make a landing and discipline his soldiers. When he reached the falls he disembarked on Corn Island. At the end of the month he moved forward with his fighters leaving the immigrants. These families became the real founders of Louisville and christened it in honor of King Louis the XVI, who aided the Americans in their struggle against England. But this was not until after Gen. Clark had returned from his victorious warfare upon the Indians, and had ordered the building of a fort on the Kentucky shore opposite the Falls. Those who came originally with Geo. Clark and others who came after wards held a public meeting on April 10, 1779, and appointed trustees to lay out the town. John Corbley made the survey. One street skirted along the river bank, with 12 cross streets at right angles.

The next developing step was taken by Virginia Legislature, May the 1st, 1780, in confirming this action of appointing nine trustees to take charge. Louisville continued under trusteeship, either by appointment or election, from 1780, till 1828. During this period Main, Market and Jefferson streets were established. The Charter of 1828, transferred Louisville to a mayor and ten councilmen. John Bucklen was

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the first Mayor. Since then the city has continued to grow and expand, southward, eastward and westward into its present metropolitan proportions and distinctions, being 131 years old, covering an area of 15,646.85 acres or 24.45 sq. miles, with a population of nearly 224,000, with a property valuation of $171,000,000 and buildings numbering over 90,000, shaded and beautified with over 300,000 trees. Building operations annually over $5,000,000. Bank clearings annually $653,849,-219. Internal Revenue receipts $17,507,239.09, with postoffice receipts for the year 1910, over one million dollars.

A city of churches—all creeds and cults and denominations embraced. Buildings number 265. Denominations divided as follows:

CHURCHES.

Baptist	white 35; colored 20
Christian	white 17; colored 4
Episcopal	white 15; colored 1
Evangelical associations	1
German Evangelical	8
Reformed	4
Israel	6
Latter Day Saints Church	1
Lutherian	9
Methodist Episcopal (North)	7
Methodist Episcopal (South)	20
Methodist Episcopal (colored)	17
Presbyterian (Northern)	9
Presbyterian (Southern)	15
Roman Catholics	32
Scientist	1
Seventh Day Advent	1
Social Settlement	1
Spiritual	2
Swedenborgian	1
Unitarian	2
United Brethren	1
Gospel Mission	8
With Cemeteries numbering	14

Its Public School System Includes:

High Schools	7
Public Day Schools	57
Public Night Schools	9
Public Kindergarden Schools	30

Law Schools, white	2
Law Schools, colored	1
Medical Schools, white	6
Medical Schools, colored	1
Normal Schools	1

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With a good system of preparatory schools.

Parochial Schools	33
Hospitals and Homes	50
Sanitoria for the cure of tuberculosis	3
Marine Hospital	1
United States Life Saving Stations	1
Public Libraries	6
Special Libraries	9
Clubs	30
Hotels	24
Lodging Houses	250
Restaurants	60
Number of Public Parks	20
Acreages of Public Parks	1,600
Miles of Street Car Lines	217
Y. M. C. A. Buildings	3
Commission Houses	60
Slaughter Houses	13
Suburban Electric Lines	7
National and State Banks	14
Trust Companies	5
Savings Banks	4
Race Tracks	3
News Papers, daily (English)	4
News Papers, daily (German)	1
Railroad lines and companies entering city	18
Trunk lines of railroads	9
Number of miles of railroad in the county and city	226.8
Steam boats that ply the Ohio and pass this city	15
Night Owls, half hour service, Market, Green, Fourth and Portland	4
Theatres	9
Office buildings	51

Public Buildings:—City Hall, Court House, County Jail, Armory, Louisville Public Bath House, Federal Building, Public Library, City Hospital and Fire Department 8

Over 300 different clubs, orders and societies, including every known club or order of the world.

Louisville is distinguished and leads in the following:

Site of the State Fair.
Home of the American Printing House for the Blind.
The Masonic Widows' and Orphans' Home.
The largest tobacco market in the world.
The second largest wholesale hardware house in the world.
Largest bath tub factory in the world.
Largest axhandle factory in the world.
Largest exclusive organ factory in the world.
Largest producer of sole leather in the world.
Largest output of jeans and corduroys in the world.
Largest cement factory in the U. S.
One of the four largest plow factories in the world.
Largest box factory in the world.
Largest exclusive wagon manufacture in the world.
One of the largest poultry and egg markets in the U. S.
Largest cattle market in the South.

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Largest stock yards in the South.
Largest soap factory in the South.
One of the largest mule markets in America.
Largest sewer pipe plant in the South.
One of the largest wholesale drug distributing points in the South.
One of the largest wholesale grocery distributing points in the South.

JESSAMINE COUNTY.

Jessamine County is located near the central part of the state, and is one of the famous bluegrass counties.

Jessamine is one of the smallest counties in the State, but has a good population, being something like 13,000.

The surface of this county is undulating, and the soil is very fertile. It is of a limestone formation and well adapted to agricultural products. Corn, wheat, hemp, oats, tobacco and hay are the principal crops, and are grown in abundance. This is one of the most productive counties in the State.

Much attention is given to the raising of vegetables, and truck gardening receives much attention also.

Diversified farming is engaged in in this county to some extent and is proving to be very satisfactory.

Stock raising is one of the chief industries of the county and many fine horses and cattle are raised and put on the market.

The county has three Railroads running through it thus giving the farmers fine shipping facilities for their products.

Nicholasville, the county seat is located near the central part of the county at the junction of the C. N. O. & T. P. and L. & A. Railroads, and has a population of about 3,500 people, has eight churches, three banks, two graded schools, two colleges and a barytes mill, creamery, steam laundry and the much talked of Withers Memorial Library. Nicholasville is an up to date town, and commercial center for that section of the State.

JOHNSON COUNTY.

Johnson County is located in the eastern part of the State, bounded as follows; on the north by Lawrence, on the east by Martin, on the south by Floyd and on the west by Magoffin and Morgan.

The surface of the county is very irregular, being cut up by the foothills and spurs of the Cumberland Mountains, thus making it strictly a mountain county.

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The soil of this county is chiefly of sandstone formation, and most all the agricultural products common to this climate grow in the county, but not to such an extent as in several other counties of the State. The valleys are wide and fertile, and especially are they fertile along the rivers and creeks.

Coal mining is the chief industry in this county. The output of the coal mines is very great.

The principal Railroad of the county is the C. & O., which has a branch running from Ashland to the headwaters of the Big Sandy River, thus giving fine facilities for the movement of the vast quantities of coal which underlie the mountainous sections of the county.

The county roads of this county are fairly good for a mountain county, but there are none of them good in the mountain counties, and the greatest needs of the mountains are better roads. The people of the mountains feel that they are not having a square deal from the State; they claim that the State helped to build hundreds of miles of good roads in the central portions of the State, and that they helped to pay for same, and that they are justly entitled to the same consideration.

Paintsville, the county seat is located in the southeastern part of the county on the C. & O. Railroad, and is the principal town in the county.

KENTON COUNTY.

Kenton county was carved out of Campbell in 1840. It lies on the Ohio river and in the extreme northern part of the State. It is bounded on the north by the Ohio river, about six miles on the east by Campbell county and then about thirty miles by the Licking river, running the full length of the county on the eastern border, on the south by Pendleton and Grant, and on the west by Boone county.

Kenton is a very narrow county, ranging only from six to ten miles wide and about thirty miles in length. The land is very hilly and much broken. There is some beautiful scenery along the eastern border of Kenton county. The bluffs overhanging the rapid waters of Licking river present some grand views. From the heights back of the city of Covington is a grand view of the city of Cincinnati and four cities on Kentucky soil and several monster bridges spanning the great Ohio.

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The soil of this county is made up of clay and limestone, which is a good combination. It produces fairly well such crops as corn, wheat, hay and tobacco. It produces a fine quality of fruit and in great quantities. The demand o these great cities for truck farm products and the facilities for reaching the markets is giving great impetus to the truck farming, making it the principal industry of the county. There has been no minerals, gas, or oils discovered in the county. This county has a population of about 75,500, about 60,000 of these residing in the city of Covington. There are about 230 miles of turnpike roads in the county and 100 miles of dirt roads. These roads are kept up by taxation.

There are railroads in the county owned and operated by three different companies, the C. & O., 2.39 miles; the L. & N., 37.67 miles, and the C., N. O. & T. P., 14.60 miles, making in all 54.66 miles.

This county is principally watered and drained by Licking river and its tributaries. Kenton county is a fine producer of berries, especially strawberries, dewberries, raspberries, gooseberries and blackberries. There is also a considerable amount of dairying in this county.

The great abundance of fine timber that once covered the classic hills of Kenton county has passed into history. It has been cut away until the entire county is almost nude of timber.

Kenton county possesses an honor of which only one other county in the State can boast, that of having two county seats, one at Covington, in the extreme northern part of the county, and one at Independence, a small inland town in the central part of the county. They each have a court house. The county officials reside at Covington and their assistants at Independence.

Covington is quite a thriving city. Has a population of 60,000; its streets are asphalt, brick and macadam. It has twelve public schools and one graded school, also several private schools; nine churches, one library, one hospital and six banks. The streets are lighted with electricity. It has a good system of electric street railway and waterworks. Also has tobacco and rope factory, iron foundry and two distilleries.

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Number of timber lands 900
Number of cleared lands 96,706

Crops grown Corn, Wheat, Oats, Tobacco.

Total value of property $31,904,958.00
Total amount taxes..... 249,382.00
Average price farm land, acre 52.00
Number of churches 53
Banks 17
Principal Industry:—Tobacco Factory, Iron Factory, Tile Works, Roll Mills.
Average price farm labor .....$1.50 a day, $40.00 month
Burley tobacco, acres.....1,300
Wheat 1,400
Corn 2,340
Clover 2,800

Dairymen.

H. E. Wolf .....Franklin St., Covington.
Mrs. Wettig .....1668 Jefferson St., Covington.
Geo. Goodhue .....1649 Jefferson St., Covington.
John Vogenstahl .....719 Crescent Ave., Covington.
H. Staggenborg .....153 East 17th St., Covington.
John Lambert .....203 Howell St., Covington.
Thos. E. Dorsey .....Erlanger.
Walter Eubanks .....Crescent Springs.
William Eubanks .....Madison Pike.
Joe List .....Lexington Pike.
Henry Stallo .....Lexington Pike.
George Meiman Estate .....Lexington Pike.
J. H. Bramlage .....care J. C. Ritter, 6th and Craig, Covington.
T. B. Baker .....care J. C. Ritter, 6th and Craig, Covington.
M. Cahill .....Erlanger.
Ben Decker .....Sandfordtown.
C. H. Demean .....Dudley Pike.
H. Deters .....Kyle's Lane.
Henry Dusing .....Madison Pike.
H. Duichle .....Lexintgon Pike.
R. A. Hand .....Madison Pike.
A. B. Hartman .....Dudley Pike.
Joseph Kahman .....Sandfordtown.
Henry Kollman .....Latonia.
Barney Gripshover .....Dudley Pike.
Poetter Bros. .....Taylor Mill Pike, R. F. D.
Ratterman & Summe .....Sandfordtown.
William Reeves .....Sandfordtown.
P. M. Reeves .....Sandfordtown.
Fred Requardt .....Lexington Pike.
Ben Vogt .....636 Main St.
J. H. Schillmoeler .....Kyle's Lane.
H. Steenken .....Kyle's Lane.
Clemens Schulte .....Latonia.
Steffen Dairy Co.....827 Madison Ave.
H. Trenkamp .....Highland Pike.
Henry Tecker .....Turkey Foot Road.

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J. Wingermuhl .....care Peter Steffen.
Chas. Nunery .....care R. A. Hand.
Jas. E. Powers .....Crescent Springs.
J. C. Noll .....Crescent Springs.
Longwood Herd Co.....Box 231, Covington.
J. J. Unkraut .....Michigan Ave.
Jacob Hoffman .....Erlanger.
N. & I. Park.....Latonia Station.
Jas. A. Graham .....Lexington Pike.
Mart Mikels .....Erlanger.
E. A. Souther .....Ludlow, R. F. D. No. 1.
Summe & Ratterman.....30 Elm St.

KNOTT COUNTY.

Knott county is one of the eastern counties of the State, and like most of the other eastern counties, is mountainous. The mountains of this county are mostly the foot hills and spurs of the Cumberland mountains, which reach out into the various sections of the southeastern and eastern part of the State.

The principal wealth of this county is its great deposits of fine bituminous coal. The most of the county is underlaid with the vast coal deposit, and ranges from two to ten feet in thickness, and there are several stratas of it in various parts of the county.

Much fine timber has been wasted in this county by the farmers cutting it down, and deadening it for the purpose of clearing the land for farming purposes. Much virgin forest has been destroyed in this way.

The soil of this county is principally of a sandstone formation, formed from the decay of sandstone and the decomposition of vegetable matter upon a clay foundation.

The principal crop grown in this county is corn. Some attention is also given to the raising of grasses, such as the timothy and herd grass for hay. Vegetables are raised in this county enough to supply the home demand.

There is a fine school established at Hindman, the county seat, and is attracting very much attention in that section of the State, and is doing a wonderful lot of good.

Hindman, the county seat, is a little town of about 400 inhabitants, and is the smallest town in the State to have electric lights. It is located near the center of the county on what is known as Troublesome, a tributary of the Kentucky river.

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The roads of this county, like the rest of the mountain counties, are bad. And the greatest need is better roads.

KNOX COUNTY.

Knox county is one of the old counties of the State. It has a population of 18,472. The county is situated in the southeastern part of the State, in what is known as the mountainous and mining section of Kentucky. The soil is of a sandy loam, or of sandstone formation. It is both an agricultural and mining county. The soil is fertile and more especially along the Cumberland river, which stream divides the county, and a good portion of the county is in the Cumberland river valley.

The principal crops are corn, oats, hay and all the vegetables and fruits.

The county contains an abundance of mineral and timbers. The timbers are principally oak, hickory, poplar, pine and some good hardwoods.

The principal minerals are coal and petroleum. Coal is found in most all parts of the county, and oil is found in what is known as the Richland valley, along Richland creek, and in the central part of the county along the Cumberland river. Natural gas is also found in the Cumberland river valley, and is used for heating and lighting purposes, and is of a very fine quality.

The county is in need of better roads. The roads are very bad in Knox, as well as the other mountain counties, and owing to the fact that there is no limestone in that section of the State it is a difficult matter to construct roads that will stand, without a great cost to the county. Limestone used for piking purposes must be shipped in from the central part of the State, or from the western edge of the State of Virginia.

The county has two railroads. The Louisville & Nashville crosses it at about the center, and the Cumberland crosses about one-half the county, that being the southeastern section.

Knox county has three white graded schools, eighty-four white common schools and five colored common schools, 7,650 white pupil children and 200 colored pupil children.

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Barbourville, the county seat, has a population of about 2,000 or 2,500 people. Has two good colleges and a good high school. The attendance at the three schools in the county seat is about 1,400 to 1,600 students during the school season. Barbourville has electric lights, natural gas and a good waterworks system; good concrete sidewalks and lime piked streets and is located on the Cumberland river in the beautiful Cumberland valley.

Barbourville is an excellent place for the location of a furniture factory, spoke factory or wheel factory. There is no such industries in that section of the State and the citizens of Barbourville will give to any company who will erect such factory, free of cost, a beautiful site near the railroad and river.

Barbourville has two national banks and two newspapers.

LARUE COUNTY.

Larue county is located a little west of the center of the State, and is a small county. This county is located on the head waters of the Nolin river, and is bounded as follows: On the north by Hardin and Nelson counties, on the east by Marion and Taylor, on the south by Green and Hart, and on the east by Grayson and Hardin counties.

The soil of this county is not so rich as some of the surrounding counties, but still it produces very well, and the farmers are making it better every year by the use of fertilizers and rotating their crops.

Agriculture is the chief occupation of this county, and the principal crops are corn, hay, wheat and oats, and some tobacco.

Much attention is also given to stock raising, and especially to that of mules and sheep, as many hundred head of them are fed in this county, and marketed. Much attention is also given to the raising of cattle.

There are a few manufactories in this county, such as hoop and barrel factories. The J. M. Atherton & Co. factory at Athertonville, and some others in the county.

There is also found in this county oil and natural gas, while neither are extensively developed, it is thought that they will prove very valuable to the county.

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This county has the distinction of laying claim to the birth place of President Lincoln, and the old place has been made a national park and is soon to be dedicated, at which time the President of the United States is to deliver an address.

There are several good schools in this county, among which are two colleges.

The roads of this county are an average of the State, but could be made a great deal better, and the citizens are anxious for a road system.

LAUREL COUNTY.

Laurel county is located in the southeastern part of the State, and is one of the large counties of the State, not the largest by any sort of means, but among the large ones in the State.

The soil of this county is of a light sandy loam, and is not very rich, but still brings very good crops of agricultural products.

The chief crops of the county are corn, wheat, oats, hay, fruit and tobacco. The surface of the county is mostly undulating, save in the northern part, where it is much broken by low rolling hills and deep ravines.

The tobacco crop of this county is increasing very rapidly. Only for the last three or four years have the farmers tried to raise it for the market, and it is becoming one of the chief industries of the agricultural trade.

Much attention is also given to coal mining in this county, as the greater part of the county is underlaid with a very fine strata of bituminous coal. In some parts of the county, in order to mine this coal it is necessary to slope for it, and in other parts it is mined by the dead lifting system. There are several good coal mines in the county, and they furnish employment to hundreds of the laboring class of people, and fine markets for the farmers to take their produce to.

Much attention is given to truck gardening in this county. There are some colonies of Swedes in the county and they are very fine truck growers. They also give much attention to the raising of fruit, and especially grapes.

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The timber of the county is principally oak and pine, but most of it is gone, save in a few well preserved tracts, and they are very fine. London is the county seat of the county, and is a thriving town; has a fine college and good graded school, good churches and a government building.

The county roads of this county are a little past the average for the mountains. They are very sandy and thus do not get so muddy as in most sections of the mountains.

LAWRENCE COUNTY.

Lawrence county was formed in the year 1821, and was the sixty-ninth in the order of formation. It was formed from parts of Floyd and Greenup counties, and was named after Captain James Lawrence of the United States navy, whose dying words on board the Chesapeake, "don't give up the ship," have become national. It lies in the extreme eastern part of the State, and is bounded by the counties of Boyd, Carter, Elliott, Morgan, Johnson and Martin and by the Tug fork of the Big Sandy river to the forks of the same and then by the Big Sandy river. The population of the county by the census of 1910 was a few over 20,000 inhabitants. The surface is hilly and broken, but the soil is fertile and produces well. The county is well watered and is drained by the Big Sandy river, a number of streams flowing into it. Considerable timber abounds, such as oak, poplar, beech, walnut and chestnut. Coal and iron exists in many sections, the former being as fine a quality of bituminous as can be found anywhere. The Peach Orchard Coal Company and the Louisa Coal Company each have a large output.

Louisa, the county seat, is situated on the Big Sandy river at the confluence of the Tug fork and the Levisa forks. It is a thriving little city with a population of over 2,000 inhabitants. It was laid out as the county seat June 10, 1823; with the usual public building. The court house is one of the best in this end of the State; many good stores, four churches, high school building, the Kentucky Normal College, one of the best in the State. There are several smaller towns in the county—Peach Orchard, Charley, Blaine, Glenwood, Lowmansville, Webbville, Fallsburgh and Buchanan. The roads and bridges are not as good as should be, but

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there is a spirit pervading the people for a betterment of the same. The county is confined to agricultural pursuits.

Lawrence county has 21,000 inhabitants, and is one of the largest counties in the State, being about 40 miles square. It borders on Big Sandy river about 35 miles.

The northwestern part of the county is adapted to grazing and the soil is good for bluegrass; while the central part, known as the Blaine valley, is adapted to farming and raising fine stock.

In the southern part there are fine coal operations. The Peach Orchard coal is said to be the finest in the State. The Louisa Coal Company has expended a large amount of money developing its property and is putting out several cars of coal daily.

Louisa is the county seat and is noted for her K. N. C. college. We have the best school in Northeastern Kentucky.

Louisa has no saloons and scarcely has a drinking man in her limits. We also have four good churches and lots of church people.

It is a city of about 2,000 inhabitants and situated at the junction of the Louisa and Tug fork of the Big Sandy river.

LEE COUNTY.

Lee county is located in the eastern part of the State, and is a mountain county. The surface of the county is very irregular and broken. The county has the distinction of having all three of the forks of the Kentucky river pass through its borders. The three forks of the river come together here in this county and form the Kentucky river proper. The North fork, Middle fork and South fork.

The soil of this county is of varied formation and is reasonably well adapted to the growth of agricultural products. The chief crops are corn and hay, and much attention is given to the raising of fruits and melons. The berry fruits are very prolific in this county. Grapes, apples, pears and peaches are also grown to a considerable extent.

The river valleys are among the most productive farm lands in the State. The chief crop in the river bottoms is corn. Some of them have been in corn for the last fifty years and still seem to be just as good as they were when first put under the plow. The reason for this is that they overflow

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every year and are continually made better by the silt and settlings of the overflowing rivers.

The timber of this county is like most of the other counties, been cut over and the best of it gone. There is about one-third of the county still in timber, the principal kinds being oak, poplar, pine and chestnut.

The county has two railroads, and the Kentucky river is navigable for steamboats six months out of the year.

There are good coal deposits in parts of the county, and some of it is being mined and shipped to the markets.

The county roads of this county are very bad, and the greatest needs of the citizens of the county is better roads. Factories are also very much needed, and especially of a woodworking character.

LESLIE COUNTY.

Leslie county is located in the extreme southeastern part of the State. The surface of this county is very irregular and broken by mountains. This county is drained by the Middle fork of the Kentucky river and its tributaries, Cutshin, Rock House and Grapevine creeks.

The soil of this county is of sandstone formation with a clay subsoil. The soil is formed from the decay of sandstone and the decomposition of vegetable matter, and the soil is very fertile along the rivers and creeks, and some of the hill land is very loose and fertile. The principal crops of this county are corn and oats. Considerable attention is given to the growing of sorghum.

The chief wealth of this county is in its coal deposits. Leslie county is one of the greatest coal counties in the State in point of fine quality and quantity. The county is almost all underlaid with several very fine stratas of bituminous coals, and some of the finest stratas of cannel coal to be found anywhere in the country.

There are still some very fine tracts of timber lands located in this county, but the greater part of the timber has been cut away and is gone. Thousands of dollars' worth of timber has been destroyed in this county by the farmers cutting it away and deadening it on the land being cleared for farming purposes.

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Hyden, the county seat of Leslie county, is located at the mouth of Rock House creek, where it empties into the Middle fork of the Kentucky river, and has a population of about 400 people.

The greatest needs of this county are better county roads and a railroad over which to transport their vast coal and timber.

LETCHER COUNTY.

Letcher county is located in the extreme southeastern part of the State and is one of the Virginia border counties.

The surface of this county is very irregular and broken with the many mountains of the county. The mountains of this county are the Pine mountain and the Black mountains, which are so much noted for the fine coal and timber.

The chief wealth of this county, like Leslie and Perry, is in its mineral deposits, and the chief of the minerals in the county is bituminous and cannel coal.

This is one of the richest coal counties in the State, and not only in the State, but in the country. The seams of coal in this county range in thickness from 2 to 10 feet and the quality is very fine. There is now being built a railroad up the Kentucky river through this county which will develop the mineral wealth of the county and make it one of the richest in the State in point of dollars and cents. Within the next year or two this will be one of the greatest coal producing counties in the State. The timber of this county also forms a good portion of the wealth of the county. There are some of the finest boundaries of timber in this county to be found in the State.

Farming is also one of the chief industries of the county. The principal crop is corn. So far there has been enough farm products raised in the county to supply the demand of home consumption in everything but wheat. The wheat products are mostly shipped into the county.

The county roads of this county are very bad, and the greatest needs of the citizens are better county roads, and in order to get them they think they will have to receive assistance from the State.

Whitesburg is the county seat and is located near the central part of the county on the North fork of Kentucky river, and will be the chief railroad town in the county when

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the road is completed. Whitesburg has about 500 inhabitants.

LEWIS COUNTY.

Lewis County was made of part of Mason County. It was organized April 27, 1807. Its first county seat was at Poplar Flat a small village in the central part of the county, its first court was held in the residence of Oke Henchiek and was held by the Magistrates of the county, eight in number.

The county is located on the extreme north border of the State, and is bounded as follows: on the north by the Ohio River for a distance of about 40 miles, on the west by Mason and a part of Fleming about thirty-five miles, on the south by a part of Fleming and Rowan about thirty miles and on the entire east by Carter County about forty-five miles.

It was named in honor of Captain Meriwether Lewis, who accompanied William Clark on his celebrated expedition over the Rocky Mountains to the Pacific coast.

The principal soils of this county are of clay, sand and limestone, while in the Calim creek valley is found considerable limestone resting on a rather light clay sub-soil, and yields very abundantly such crops as corn, hay, oats, wheat and tobacco. While the uplands are not so fertile as the Ohio River bottoms and the valleys they grew the native grasses very abundantly and are well adapted to the grazing of cattle and sheep, and also to the growing of fruits both of the large and small type. Quite an abundance of fruits from this county are shipped to Cincinnati and other cities each year.

There are a number of gas and oil wells throughout the county but are not producing very abundantly, there are also some salt wells in the county. There are something over one hundred thousand acres of timber land remaining in the county but it is of little value.

There are some factories in the county, the largest of which is the brick factory at Fire Brick and the leading factory at Garrison.

The breeding and improvement of live stock has been seriously neglected in this county though there has recently been organized a county fair association and the people are beginning to take more interest in breeding and raising of better stock and prospects are very flattering for great improvement along these lines in the near future.

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Lewis County has fifty-six miles of railroad, the C. & O. forty miles running east and west along the Ohio River and a branch line of the same road running into the central part of the county a distance of sixteen miles.

Vanceburg, the county seat, is situated on the banks of the Ohio River and on the extreme northern edge of the county. It has a population of about fourteen hundred, has grown very rapidly in recent years; it now contains many business houses, beautiful residences and some handsome churches.

The streets are macadam with concrete and flagstone sidewalks, has one city graded school.

There has recently been built a button factory in the east end of the city and a canning factory in the west end, considerably increasing the business of the city.

LINCOLN COUNTY.

Lincoln County is located near the central part of the State and was one of the three original counties of the State of Kentucky, having been created by the Legislature of Virginia in the year 1780.

It is located about midway between Louisville and Cumberland Gap, in the foothills of the Cumberland Mountains.

The surface of a portion of the county is irregular and broken, while other parts of the county are almost level.

The soil of the greater portion of the county is very fertile, being of limestone formation and is exceedingly well adapted to the raising of farm products. Corn, wheat, hemp, oats, rye, tobacco and hay are the principal crops. These crops are grown very prolifically in the greater portion of the county.

Much attention is also given to the raising of fine horses and cattle, sheep and hogs are also extensively raised. Many mules and cattle are kept and fed for the markets in this county, and the cattle exported from this county amount to thousands of dollars each year.

Oil and gas are also found in this county, but not to very much extent and have never been developed.

Many medicated springs are found in this county, and those at Crab Orchard are among the most noted in the country. Thousands of health seekers visit them every year. It is here that the celebrated Crab Orchard Salts are made and

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sent to all parts of the world. There are several classes of medicated waters.

Stanford, the county seat, is located near the center of the county on the L. & N. Railroad, and is one of the oldest towns in the State, has a population of about 3,500 people, and is an agricultural center. Stanford has some very fine schools, among them being a school for girls which is very well attended.

The roads of this county are very good, especially the piked or macadamized class of them. They are kept up by an annual taxation of 25 cents on the one hundred dollars worth of taxable property in the county.

LIVINGSTON COUNTY.

Livingston County is located in the western part of the State, and most of the county is in the valleys of the Ohio and Cumberland Rivers. The surface of this county is uneven and irregular, and in some parts broken.

The soil of this county is of two formations, that of sandstone and limestone. The soil of the uplands of the county are not very productive, while that of the river bottoms is of a sandy loam or alluvial nature and is very fertile and produces well. Farming is the chief industry of this county, and the principal crops are corn, hay, tobacco and some wheat.

Much attention is also given to the raising of live stock, and this is quite an important industry of the county.

There is also found in this county a fine quality of flourspar.

Smithland, the county seat, is located at the junction of the Ohio and Cumberland Rivers. This is the largest and most important town in the county. It has a population of about 1,300 people, and is quite an important commercial center for this section of the State.

Livingston County has no railroads, but the Ohio and Cumberland Rivers are both navigable for steam boats and serve for shipping facilities.

There are 54 common schools in the county with a pupilage of about 3,700 children; it also has 56 churches and 6 Banks.

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LOGAN COUNTY.

Logan County was one of the first seven counties organized in the State, and was admitted into the State as a county during the year 1792, the same year the State was admitted into the Union.

This county is located in the southern part of the State and bounded as follows: on the north by Butler county, on the west by Warren and Simpson, on the south by Tennessee and on the west by Todd County.

The surface of this county is most all smooth and regular with the exception of a few low rolling hills. The soil of this county is, in formation, like that of the most of the counties in the western part of the State, of a dark rich nature on red clay foundation. The river bottoms of the county have a deep rich alluvial soil, and are well adapted to the growth of corn and vegetables.

The chief industry of this county is agriculture, and the chief crops, corn, wheat, tobacco and hay, are raised in the county.

There is both coal and asphalt found in this county, which are being mined to some extent, and bid fair to become very valuable assets of the county.

Russellville, the county seat of the county, is located on the L. & N. Railroad and is a town of about 4,500 inhabitants.

The county has some very good piked roads and a great many miles of dirt roads. The chief needs of the county are factories, and better roads.

LYON COUNTY.

Lyon County is located in the Western part of the State, in the valleys of the Tennessee and Cumberland Rivers, and is bounded as follows: On the north by Caldwell and Livingston, on the west by Trigg and Christian, on the south by Trigg and on the west by Marshall and Livingston counties.

The surface of this county is level and regular in parts, and in parts it is hilly and broken.

The soil is of limestone formation, in some parts on a clay bottom, and in other parts it has a limestone foundation and is very fertile and well adapted to farming.

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Farming is the chief industry of the county and the principal crops raised are corn, wheat, tobacco and hay. The Cumberland river bottoms are among the most fertile lands in the state, and much farm products are raised here.

The county has the I. R. Railroad running through it, and it taken with the Cumberland River which is navigable for large boats through the county, give it fine transportation facilities.

Eddyville, the county seat, is located on the banks of the Cumberland River, with a population of about 1,500 people. The branch penitentiary of the State is located here, which is a great help to the town. It is at this prison that the criminals are all put to death in the electric chair. This has only been since the last Legislature met, at which time the law was passed providing for the electrocution of all criminals condemned to death.

The county needs factories to give better employment to the laboring class of people.

MADISON COUNTY.

In 1780 Kentucky was divided into three counties, Jefferson, Fayette and Lincoln, and six years later, in 1786, Madison County was formed from a part of Lincoln County.

The surface of this county is rolling and hilly, but some of the finest land in the State is to be found here. The principal occupation of the people is farming. The soil is well adapted to the raising of corn, tobacco, wheat, oats, hemp, clover, timothy and blue grass. Enough alfalfa has been grown in the county to demonstrate that it can be successfully grown.

Horses, mules, sheep, cattle and hogs are raised in large numbers. Some very fine horses have been bred in this county and the cattle that are exported from here are the very best that are raised in Kentucky.

The Kentucky River flows along the northern border of the county and is navigable for small boats during the rainy season. The timber that remains in the county is mostly in the eastern section.

Most of the roads in the county are dirt roads which are kept in repair by militia and taxation. The turnpikes in the county are built of limestone, slate and gravel. The county has a road supervisor who is elected by the fiscal court.

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The greatest need of the county at present is some manufacturing industries. A hemp and a tobacco factory would be a paying investment and at the same time be a boom to the county.

One of the State Normal Schools is located at Richmond, the county seat, and has in attendance a large number of students. Berea College is also located here and has the reputation of being one of the best schools of the kind in the State.

The L. & N. and the L. & A. railroads traverse the county, giving it excellent transportation facilities.

MAGOFFIN COUNTY.

Magoffin is situated in the eastern part of the State and being one of the counties of the mountain section is hilly in most parts, but has some very fertile farms along the river bottoms and along some of the larger creeks.

The county was formed in 1859-60 out of parts of Floyd and Morgan counties and named after Governor Magoffin.

The county has a large supply of fine timber that has not been cut. Large quantities of coal lie untouched beneath the surface while only a small amount is being mined. When better transportation facilities are provided manufacturies will be opened and the natural resources of the county developed.

The principal occupation of the people is farming. Corn, wheat, oats, hay and rye are the principal crops. In some sections of the county, principally along the Burning Spring Creek, tobacco has been raised in paying quantities.

The soil is a sandy loam and clay, and although the county is mostly hilly the soil is fertile.

There are no turnpikes in the county, but the dirt roads are kept in very good condition for this class of roads. The county owns its own road machinery.

The population of the county is mostly white, there being but few colored people in the county.

The county has a supply of fine mineral springs which furnish water all the year. It is also expected that paying oil wells will be found here when operations begin along this line. Gas will also undoubtedly be found when wells are drilled.

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MARION COUNTY.

Marion County is located near the central part of the State and has about as variagated topography as is possible to find in any county of the State. It has its level lands, its rolling and undulating plains and its hills and knobs towering up almost into mountains. The surface of the county is very much diversified.

The soil of the county, in the main, is of good strong limestone formation and brings forth good crops.

Farming and stock raising are the chief industries of the county. The next most important industry of this county is its vast distillery interests. Some of the finest distilleries in the country are to be found in Marion County.

The chief crops raised in the county are corn, wheat, tobacco, oats, hay and vegetables of all kinds.

Much attention is also given to stock raising. Many horses, cattle and mules are raised in this county, as well as a good number of sheep and hogs. The mules of Marion County are famous for their size and make, and much attention is given to the mule trade here.

There are also a number of good flour mills in this county, and they do a nice flouring business, shipping their products to almost all parts of the State.

The county is provided with splendid schools, both public and private. St. Mary's College for young men and Loretta Academy for young women are both splendid institutions.

This county has two branches of the Louisville & Nashville Railroad, thus giving the county good shipping facilities.

Lebanon, the county seat of the county, has a population of about 4,200 people and is a good town. The manufacturing interests of the town are embraced in two large flouring mills, two planing mills, lumber establishment and several cigar factories.

MARSHALL COUNTY.

Marshall County is located in the southwestern part of the State, in the big bend of the Tennessee River, and is a part of what is known as the Purchase in the western part of Kentucky.

The county is bounded on the entire north and east by the Tennessee River. This and the N. C. & St. L. Railroad give the county fine shipping facilities.

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The surface of the county, in the most part, is level and regular. There are a few low rolling hills to be seen in the county. Farming is the chief industry of the county, and the principal crops grown are wheat, corn, oats, hay and tobacco.

This county has 70 common schools and about 5,400 children within the school age. Has about sixty churches and four banks.

Benton, the county seat, is located in the central part of the county and has a population of about 950 people.

MARTIN COUNTY.

Martin County is situated in the extreme eastern part of the State and is bounded as follows: On the north by Lawrence, on the east by West Virginia, on the south by Pike and on the west by Johnson Counties. The area of this county is small and the population sparse, the entire population of the county being only about 8,500 people.

The surface of this county is very irregular and broken by its many mountains, sloping eastward to the West Virginia line and is drained by the Tug Fork of the Big Sandy River.

The soil of this county is a sandy loam and along the narrow creek bottoms is very fertile, but on the hillsides the soil is very much worn, and in a low state of cultivation. Farming is the principal industry of the county, and the chief crops are corn, oats, wheat, potatoes and tobacco. The lands of this county have been worn very much, and the soil in a great many parts of the county is almost gone, on account of the people raising grain and not much else on the land. The rotation in crops has not been practiced in this county, and the results are that the best part of the soil is gone. The supply of food stuffs raised in this county are not sufficient to supply the demand of the home consumers. It is estimated that about $25,000 worth of food supplies are shipped into the county each year.

The principal minerals of the county are, coal, iron ore and gas. Although no coal is being mined there are a number of different seams of very fine coal in the county. There are no railroads in the county over which to ship the great coal and iron wealth of the county. The greatest needs of the people in the county are some railroads and better county roads.

Inez, the county seat, is located near the center of the county and is a town of about 600 inhabitants.

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MASON COUNTY.

Mason County is situated in the extreme northeastern part of the State on the Ohio River.

The surface of this county is very irregular along the streams, and as you approach the Ohio and other rivers of the county the hills are more rugged and the surface is a great deal more broken than it is back from the streams. As you get back from the streams the country broadens out into broad undulations and fertile tracts of land.

The soil of this county is of the lower silurian formation of the lower limestone character and is composed of marine fossiles, showing signs of later life than those of other parts of the State.

The soil of the county is composed of about 75 per cent. limestone and 25 per cent. sandstone, and, as above mentioned, is very fertile and produces well the crops adapted to this climate. Like the bluegrass counties of the State, the principal crops of this county are corn, wheat, tobacco, hay and other crops.

Diversified farming is being engaged in in this county very extensively and the farmers are making their land better by the crop rotation method of farming.

This county has about 450 miles of macadamized roads and equal in quality to any in the State.

Mason County has forty common schools, two graded schools and one college, and great progress is being made along the lines of education in this county.

Maysville, the county seat of the county, is situated in the northern part of the county on the Ohio river. It also has the L. & N. R. R. and C. & O. R. R. running through it. The county seat has a number of factories of various kinds—Cotton factory, pulley factory, shoe factory, tobacco warehouses and several cigar factories.

McCRACKEN COUNTY.

McCracken County is located in the extreme western part of the State where the Tennessee River flows into the Ohio. This county was the first to be formed out of what is known as the Jackson Purchase and is nearly level, and has been well timbered. The soil of this county is not so rich as it looks like it would be, save in the river valley, and here it is very

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rich and productive and large crops of corn are raised, but it is not so well adapted to the growth of the other cereals.

This county has fine transportation facilities, as it has four railroads running through it and is bounded on three sides by navigable rivers.

Paducah is the county seat, and is the largest town in the county, and also the largest in the western part of the State. It contains more than 30,000 inhabitants, has several fine manufacturing plants, a library and several other industries, among which is a very fine furniture factory, one of the finest in the country. This town has four railroads, two hospitals, seven banks, fifteen schools, forty churches and eighty-three saloons.

McLEAN COUNTY.

McLean County is situated in the northwestern part of the State just south of Daviess County.

The surface of this county is generally undulating and regular. The soil of the county is of a dark sandy loam, deep and very rich, and well adapted to the growth of farm products.

Farming and fruit raising are the chief industries of this county. The chief crops grown here are corn, wheat, oats, hay, tobacco, vegetables and fruits. Large fruits and grasses also grow very well in this county. The soil in the river bottoms is very fertile and rich. In the Pond Valley is to be found some as rich soil as there is in the State.

There are also to be found in this county some very rich beds of coal and fire clay of a fine quality.

There are also some good mineral springs in this county, and a sprinkling of good timber in various parts of the county.

In recent years the farmers have been devoting much attention to diversified farming and truck gardening which have proved to be very valuable and is a fine way of improving the lands.

Coal mining is also an important industry of this county as there is much coal mined here.

Calhoun is the county seat and is situated near the center of the county on the northern bank of the Green River. It has a population of about 1,000 people.

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This county has no piked or macadamized roads and the roads of the county are very bad, especially in the winter time. The greatest needs of the people in this county is better roads.

MEADE COUNTY.

Meade County is situated in the northwestern part of the State and is bounded on the north, northeast and northwest by the Ohio River, giving it a coast line of about forty miles.

The interior of the county is well watered with a number of creeks. The soil along the river is rich and productive. The hilly portion of the county is well adapted to the raising of fine fruits of most all kinds. The farmers are prosperous. Red Burley tobacco is raised with much success. A good portion of the land is still in timber, such as walnut, hickory, oak and beech.

Two railroads run through the county. Petroleum, natural gas and salt water are also found in the county in fair quantities. The gas from this county is piped into the city of Louisville for city use, such as heating and lighting, There are also found in the county fine granite, lithograph stone and cement. Some copper and lead have been found in this county, but not to any great extent, and it is not being mined.

Brandenburg is the county seat and is located in the northern part of the county on the Ohio River.

MENIFEE COUNTY.

Menifee county is located in the east central part of the State between the divide of the Kentucky and Licking rivers. About one-half of the county is drained by the tributaries of the Kentucky river and the other half by those of the Licking river.

The surface of this county is very hilly and broken, being located in the foothills of the Cumberland mountains. Much of the county is counted as mountainous.

The soil of Menifee county is of both a lime and sandstone formation, being lime in the western part of the county and sand in the eastern portion. Farming is an important industry in the county, and the crops are principally corn, hay, wheat, oats and tobacco. The tobacco crop has only been raised here for two or three years and bids fair to

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become one of the chief industries of the county. The farmers realize much profit on the tobacco raised in this county, owing to the fact that they have their own labor and are not put to the expense of hiring high-priced labor. Wheat is cultivated more extensively, and to better success on the higher parts of the county, such as the table lands.

This county is also noted for its coal deposits and gas supply. The famous Ragland fields are found in this county, from which gas is piped to a number of towns and cities in the State, among them being the city of Lexington, Ky. This is also an oil producing county.

The soil of this county is especially well adapted to the growth of fruits, and with the exception of wheat, the farmers of this county raise enough stuff to supply the demand.

There remains in this county only a limited supply of timber, most of it having been cut away and put into the markets.

The county has an ample railroad advantage, enough to facilitate shipping for the farmers and miners and other producers.

Frenchburg is the county seat and is located on the headwaters of Beaver creek near the center of the county. It is a flourishing little town of about 400 people.

MERCER COUNTY.

Mercer is one of the counties formed by the Virginia Legislature and is the sixth in numerical order of the counties in the State.

The Dix and Kentucky rivers form the entire eastern boundary line of the county, while Salt river runs entirely through the county from south to north. The county is located near the central part of the State in the beautiful bluegrass region.

The surface of the county is somewhat varied in formation. Some of it is undulating and some of it is even hilly, but the most of the county is very level and smooth.

The soil of this county is of a varied formation, some of it being a mixture of lime and gray sand, and some being pure lime soil, while in still other parts of the county is to be found some of sand formation.

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The chief industry of this county is farming and stock-raising. The chief crops are corn, wheat, hemp, oats, hay, tobacco and vegetables. Much fruit is also raised in the county. There is an abundance of corn and wheat grown in Mercer county, and thousands of bushels are shipped into the markets each year. At one time this was the largest corn producing county in the State, producing in a single year more than 3,300,000 bushels.

Mercer county is also a good stock producing county, producing many hundred head of fine horses and cattle, also as fine sheep and hogs as can be found anywhere in the State.

There are no minerals found in the county, and it is wholly an agricultural county.

This county has many miles of good turnpikes which are kept in good condition by a system of taxation. The dirt roads of the county are kept in repair in the same way.

Harrodsburg, the county seat of this county, is situated on a beautiful table land one mile from Salt river and about four miles from the Kentucky river. It is one of the oldest towns in the State and is the site of the old and noted Harrods Station. The population of the town is about 4,500, and it is an up-to-date and modern little city.

METCALF COUNTY.

Metcalf county is located in the south central part of the State and bounded as follows: On the north by Green and Adair, on the east by Adair and Cumberland, on the south by Cumberland and Monroe, on the west by Barren counties. It was made a county in the year 1859. The population of the county is about 11,000 people.

The chief industry of this county is farming and the chief crops are corn, wheat, oats, hay and tobacco. There is also much attention given to the raising of livestock, which is an important item of cash going to the farmers of the county.

Edmonton, the county seat, is situated in the central part of the county and is a flourishing little town of about 400 inhabitants.

This county has no railroads, and the nearest railroad station is Glasgow, which is about twenty miles away. The

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county roads of this county are not very good, and the greatest needs of the county are better county roads and a railroad.

Through this section of the State there is a wonderful opportunity for some capitalists to invest in an electric railway line, running from Glasgow through Cumberland and Monroe counties.

MONROE COUNTY.

Monroe county is located in the extreme southern part of the State and is one of the Tennessee border counties. This county has a watershed extending through the county in a northerly direction and forms the divide between the Cumberland and the Big Barren rivers. The principal tributaries of the Cumberland in this county are Meshac, Little and Big Sulphur, Big McFarland and Little McFarland creeks; the Cumberland also runs through the eastern part of the county. Big Barren river runs through the western part of the county and its principal tributaries are East Fork, Line and Skaggs creeks.

The soil of this county is of both sand and limestone formation and is very well adapted to the raising of agricultural products, and the chief crops are corn, wheat, oats and tobacco. Fruit is also grown to some extent in this county. The principal tobacco crop of this county is dark tobacco. There is not much Burley raised here.

There is some considerable timber still standing in this county. The roads of Monroe county are, like a great many of the roads of this section of the State, very bad in the winter season of the year, and the greatest needs of the people of this county are better roads. There is no railroad in this county and this is another very much needed improvement.

Thompkinsville is the county seat of the county and is located a little south of the center of the county, and is a flourishing town. It has a population of about 800 people, and has a fine flouring mill which furnishes the surrounding country with their flour, and is a good market for their wheat.

MONTGOMERY COUNTY.

Montgomery County is located in the eastern part of the State. Lying, as it does, in the outskirts of the blue grass, or in other words, on the dividing line between the blue grass and mountains, it naturally partakes of the characteristics of

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both the mountains and the blue grass. The surface of the county is variable in its topography, and the soil also is of two distinct and different classes or kinds. In the western part of the county the soil is of the lime formation, is very much like that of the blue grass counties, while in the eastern part of the county it is of the sandstone formation and partakes very largely of that of the mountains.

This is an agricultural county and the chief crops are corn, wheat, oats, hay, tobacco and vegetables, which are all grown in abundance.

Much attention is also given to the raising of stock and more especially to that of common stock, which are raised in great abundance, and there are also several breeders of fine stock, such as saddle stock and race stock, of both kinds of trotters and racers.

Mr. H. G. Tabb, of Mt. Sterling, is a breeder of fine race and saddle stock, Woodford Stock Farm saddle and race stock and some others in the county of like classes of stock breeding.

There are a great many cattle and sheep raised in the county and fed for the market, and form quite an item among the farming element. Tobacco is also one of the chief articles of export from this county and much revenue is brought in to the farmers from the sale of same.

Mt. Sterling, the county seat of the county, is located in the central part of the county on the C. & O. Railroad, and is a town of about 4,500 people, has some factories, a nice laundry, good waterworks, light plant and is an up-to-date little city. It has three schools, two graded schools, one normal and one academy.

The county has many miles of piked roads and all roads coming into the county seat are piked or macadamized.

MORGAN COUNTY.

Morgan County is located in the east central part of the State. It is a typical mountain county, with all the features of a real mountain country. It is rich in its minerals and timbers.

The soil of this county is like most of the other mountain counties, of a sandstone formation, and is very well adapted to the raising of farm products. This class of soil when in its virgin state is among the most productive in the

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country and very easy to work, being very loose and easy cultivated. This county is well edapted to the raising of fruit, as after the trees are put out it requires very little attention until they are grown and bearing.

The principal crops of this county are corn, hay, oats. wheat, tobacco and fruit. The soil is of a light nature and takes manure exceedingly well. With the exception of wheat the county produces enough farm products to supply the demand. The flour must be shipped in to some extent.

The county is also very rich in mineral wealth, the principal of which is coal, both bituminous and cannel. The famous cannel mines at Cannel City are among the richest in the State. The cannel coal deposits of this county are the best in the State, and are very rich. Oil and gas are both found in this county, but have not been developed to any great extent.

About one-third of the county is covered with timbered lands, but the better part of the timber has been cut and marketed.

The roads of this county are about like all the other roads of this section of the State, and the greatest needs of the people of Morgan County are better roads and in order to get them it is necessary to have a better road law enacted by the State Legislature.

West Liberty, the county seat, is located near the center of the county on the Licking River, and is a merchandising center for the county.

The educational facilities of the county are limited to the public schools of the county, but they are very good, being 79 in number.

MUHLENBERG COUNTY.

Muhlenberg County is located in the west central part of the State and bounded as follows: On the north by McLean and Ohio Counties, on the east by Butler, on the south by Logan and Todd and on the west by Christian and Hopkins.

The surface of this county is, generally speaking, very irregular and hilly, but the soil is very fertile.

The chief industry of the county is farming and mining. The chief crops are corn, hay, oats, wheat and tobacco. The bottom lands are very fertile, and yield bountiful crops of farm products.

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Coal is the chief mineral of this county and is extensively mined. The shipping facilities of this county are good. It has two railroads crossing the county almost at right angles, thus giving ready transportation to the farmers and miners for their products, when ready to ship.

Greenville, the county seat of the county, is located in the central part of the county on the I. C. Railroad, and is a town of about 2,200 inhabitants. Has good electric light and waterworks systems.

The greatest needs of this county are more factories and better roads.

NELSON COUNTY.

Nelson county is located in the northern part of the State and only a few miles south of the city of Louisville.

The surface of this county, in a great measure, is very irregular, being broken in the southern part by numerous knobs and low hills. These knobs are the timbered lands of the county, but the timber has been cut and culled over until it, like most of the other counties in the State, is about gone.

The soil of this county is of two distinct characters, or formations. In the southern part of the county it is of a light sandy nature, and not very fertile, but well adapted to the growth of fruit of most all kinds that are common to this climate, while in the northern part of the county the soil is of a substantial limestone formation and is very fertile, and the crops common to this State are all successfully grown. Some attention is also given to the raising of stock in this county, and it is an important item among the exports of the county. The soil of this county, in the creek and river bottoms, is fertile and yields abundantly. Farming is the chief industry of the county, and the principal crops are corn, hay, wheat, oats and fruit. Some tobacco is grown in this county.

One of the most important industries of this county is the distillery business. Some of the finest distilleries in the country are to be found in Nelson county, and in point of number it is among the first in the State. There are about 27 or 30 distilleries in this county.

Fine limestone is found in parts of the county, and is very valuable. The county roads of Nelson county are not so good as they should be, and the greatest needs of the people are better roads.

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NICHOLAS COUNTY.

Nicholas County is located in the northeastern part of the State, and is the seat of operations of the famous old pioneer settler and Indian fighter, Daniel Boone. This county is also the home of the famous old pioneer, Joel T. Hart, and there are still standing in the county monuments to his honor as an honest laboring man, in the form of stone fences and chimneys. Many hard fought battles between Boone and his followers and the Indians took place in this county, and it is, for that reason, an historic county. It is also famous for the old Blue Lick Springs, which were so famous in pioneer times, and which have become famous in modern times for the medical properties of the water. It is shipped to many different parts of the county and prized very highly for the wonderful curative qualities it possesses.

The surface of this county is, in the northern part, almost level and smooth, but in the southern part of the county the surface is hilly and broken. The soil is of limestone formation and is very fertile. Agriculture is the chief occupation in the county, and the chief crops are corn, oats, wheat, blue grass and tobacco. The soil of this county yields abundant crops of all the above named products. Much attention is also given to the raising of stock, and especially to that of horses and cattle. Many fine dairy herds are to be found in the county, and dairying is an important industry and a profitable business.

Nicholas county has quite a number of miles of fine turnpike roads which are kept in good repair, and the dirt roads of the county, like most all other dirt roads in the State, are reasonably good in the summer and fall seasons, but bad in the winter.

The county has several miles of railroad and the shipping facilities are fairly good, so that the farmers can get their farm products to the markets.

Carlisle, the county seat of the county, is situated a little to the west of the center of the county on the Louisville & Nashville Railroad. It has a population of about 1,600 people, and is a good town. Carlisle has one graded school, four banks and four churches.

The greatest needs of the people of this county are better roads and manufacturing factories.

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OHIO COUNTY.

Ohio County is located in the northwestern part of the State, and is one of the largest and wealthiest counties in the State. It has an abundant wealth of minerals, the chief of which is coal.

The soil of this county is of limestone formation and is very fertile, yielding abundant crops of corn, wheat, oats, hay, tobacco, and practically all the crops common to this climate. The tobacco raised in this county is the celebrated Burley kind, and is of a very fine fiber. Stock raising is also given much attention in this county. Many fine horses and cattle are raised here. Hogs and sheep are also raised to a great extent in this county, and of a fine class of breeding. Many thousand dollars' worth of stock are shipped from this county each year, and the stock export is one of the chief items of commerce to the farms of the county.

Much coal is mined in this county and shipped into the markets of the western part of the State, and into Louisville.

The county is well supplied with free schools. Hartford, the county seat, is located on Rough river, and has a population of about 1,700 people. It has banks, flour mills, sawmills, tobacco factories, etc.

The county has good railroad facilities and transportation is good.

OLDHAM COUNTY.

Oldham County was formed in the year 1723 from portions of Henry, Shelby and Jefferson counties. Oldham County lies in the north-central part of the State.

The soil is fairly good and in sections near Shelby and Jefferson County exceedingly rich. The county as a whole is well adapted to farming and stock raising. The northern part of the county is rough, but the soil is of very good limestone quality and produces abundant grass for grazing purposes.

It is undoubtedly one of the best counties in the State, if not in the United States, for orchard grass seed. Its record for quality and production is unsurpassed. The center of the county is well adapted to the raising of fruit, especially grapes, which mature rapidly and are of excellent fla-

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vor, but this feature is sadly neglected in this county, as are other fruits. This county would make an ideal fruit county and people who invest money in fruit growing will reap vast returns for investment.

If the farmers would give half the care to fruit trees they do to tobacco and other products what wonderful success would be the fruit-growing industry of Oldham County.

The land produces wheat, corn, tobacco, oats and various grasses in abundance.

Stock raising is followed extensively. There are several herds of fine cattle in the county, as well as swine and flocks of sheep.

The county is very healthy, being of high altitude, well watered by numerous springs and two large creeks. Floyd's Fork and Harrods creek, flow through the entire county from east to west.

The Short Line branch of the L. & N. Railroad traverses the county from west to east, also the Louisville and Interurban, an electric line to Lagrange, the county seat. One can go to the city of Louisville in an hour's ride, day or night.

Lagrange, the county seat, has a population of about 1,200, good streets, bank, seven churches, all denominations, and a very good school system. Lagrange is building this year a $25,000 graded school building.

Pewee Valley, where is located the Confederate Soldiers' Home, is also one of the beauty spots of Oldham County. The palatial homes built here, and the beautiful surroundings are second to none in the State.

Other towns in the county are Ballardsville, Floydsburg, Beard, Goshen, Brownsboro, Westport and Crestwood.

Two very fine springs in Oldham County are located near Lagrange, and they have quite a commercial value. They are Anita Springs and Calcium Magnesia Springs.

Oldham County is in the 7th congressional, 3rd appellate, 12th judicial, 21st senatorial and 52nd legislative districts.

DAIRYMEN.

	No. Cows.
C. E. Leet, Glenarm	9
T. J. Whitfield, Buckner	11
Joe Pickles, Lagrange	10
Jno. L. Depper, Buckner	6
I. B. McMakin, Lagrange	8

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J. W. Whitesides, Lagrange	7
Fred Wingler, Lagrange	12
Louis Hauter, Lagrange	13
J. Wilson Clore, Buckner	4
Fred Litchti, Lagrange	14
E. W. Head, Lagrange	8
J. E. Miller, Lagrange	28
Jno. L. Brown, Lagrange	8
Robert Long, Crestwood	8
E. D. Long, Crestwood	12
Guthrie & Adams, Buckner	29
W. E. Vandolah, Lagrange	17
J. W. Barrikman, Lagrange	7
Yager & Cassaday, Lagrange	8
Cassaday & Yager, Lagrange	25
T. L. Poell, Lagrange	12
M. O. Cassaday, Lagrange	13
G. Withier, Lagrange	17
T. R. Wradsha, Lagrange	7
W. D. Clore, Lagrange	20
Al Crum, Lagrange	5
Fred Massie, Lagrange	17
Payne & Shake	12
L. H. Bradshaw	25
Jno. E. Potts, Crestwood	10
J. J. Sanford, Lagrange	6
T. Z. Shereley, Lagrange	10
W. T. Puyear, Lagrange	21
Palm Woolfalk, Lagrange	13
P. J. Sanders, Lagrange	20
Dennis Rodman, Lagrange	6
W. J. Elder, Lagrange	12
E. W. Head, Lagrange	3
S. T. Taylor, Lagrange	15
L. P. Rodman, Lagrange	8
	494

OWEN COUNTY.

Owen County, the 67th in formation, was organized in 1819 and named in honor of Abraham Owen, who was a prominent Indian fighter in the early history of the State. The surface of the county is very hilly, except the Kentucky river and Eagle creek bottoms and the ridges in the central part of the county, which are gently undulating. The soil is a formation of gray limestone and clay and is very fertile and productive. Corn, wheat, oats and tobacco are the staples of the farm. The soils of Owen County are especially adapted to Burley tobacco. Some of the finest qualities to be had are produced in Owen County. The county has been almost entirely denuded of timber, there being only a few acres left. Owen County produces some good horses, cattle,

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mules, sheep and hogs of common stock. There is an abundance of fruit produced in this county. Diversified farming is being engaged in to some extent and the farmers are fast improving their lands by the methods of rotation.

There are about 350 miles of turnpike in the county. They are in very fair condition, but can stand much improvement. The county is using modern road building machinery, and hopes to have roads in excellent condition in a short time.

Owen County, which has never had the advantages of other counties in the way of railroad facilities, is now practically assured a railroad. One is in course of construction from Dry Ridge, a point on the C. N. O. & T. P. R. R. to Owenton, the county seat, and which will make Owenton an important shipping point, and which will mean expansion and growth for the county.

Owenton, the county seat of Owen County, is situated near the center of the county about ten miles from the Kentucky river and about thirteen miles from the L. & N. railroad at Sparta. It has a population of about 1,100, has macadam streets lighted with gas, has five churches, three banks, one white graded school and one colored common school and one ice factory.

Owenton is a flourishing little city with a number of good business houses and some beautiful residences of the modern type.

Postoffices—Balls Landing, Beechwood, Bethany, Eagle Hill, East Eagle, Fairbanks, Gratz, Jonesville, Long Ridge, Morgadore, Moxby, New Liberty, Teresity, Olkenton, Rockdale, Tackitts, Mills, Truesville and Wheatly.

OWSLEY COUNTY.

Owsley County is located in the east central part of the State on the south fork of the Kentucky river, and is drained by it and its tributaries, the principal of which are the Cow, Island, Sextons, Wolf, Doe, White Oak and Sturgeon creeks.

The surface of the county is hilly and broken in parts of the county, while in other parts it is a smooth table land.

The soil of this county is of a sandstone formation, and while it is not of the strongest nature, it produces well.

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Farming is the chief industry of this county and the chief crops are corn, oats and hay. The garden vegetables are also grown to some considerable extent in this county.

The county is very wealthy in coal, but it is not being developed for the reason that there is no railroad or shipping facilities by which same can be shipped to market.

The county roads of this county are like most of the mountain roads, very bad in the winter and spring season, and the greatest needs of the people are better roads and railroads over which to ship their products.

Booneville, the county seat of this county, is located on the South fork of the Kentucky river, and is beautifully located, has a population of about 400 people, has a good substantial bank, good churches and good schools.

PENDLETON COUNTY.

Pendleton County is located in the northern part of the State, one corner of which touches the Ohio river. The main Licking river runs through this county, and it, together with the South Licking constitute the drainage of the entire county.

The surface of this county is undulating, and mostly level, with a few low rolling hills.

The soil of the county is very productive, and more especially in the broad bottoms of the Licking river. In these bottoms the soil is of a dark sandy loam, very deep and rich. Agriculture is the chief industry of this county, and the principal crops grown are corn, wheat, oats, hay, tobacco and vegetables.

Diversified farming receives much attention in the county and is proving to be very profitable to the farmers. Many farmers are engaging in the truck gardening and it also is proving to be very profitable.

Alfalfa has been grown very successfully in recent years and bids fair to become one of the most profitable products of the farms of this county.

Pendleton County has been almost stripped of its timbers, and the remaining timber of the county is of a poor quality.

Falmouth, the county seat of Pendleton County, is situated on the Licking river a little southeast of the center of

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the county. It is a good sized town of about 1,700 inhabitants.

The county seat has a good system of waterworks, nine churches, one library, two banks and two schools.

PERRY COUNTY.

Perry County is located in the southeastern part of the State on the north fork of the Kentucky river.

Perry County is in the heart of the mountains and the surface is very rough and uneven, and is the most broken of any county in the State. The county is drained by the North fork of the Kentucky river and its tributaries—Cars Fork, Maces creek, Grapevine, Sassafras and Troublesome creeks. The river and creek bottoms in this county are mostly level and the soil is very fertile.

Up to the present time farming has been the chief industry of this county, and the principal crops are corn, oats and hay, together with the vegetables common to this climate.

The principal wealth of this county is its coal and timber. Up to the present time little attention has been given to the coal, but now that there is being constructed through the county a railroad, the coal mining industry is attracting more attention in this county than any other industry. The coal of this county is of the two classes, or kinds, rather—bituminous and cannel. The county is underlaid with several different seams, ranging in thickness from two feet to ten feet. The quality of the Perry County coal is very fine.

The timber of this county is still fairly good, and there are a great many tracts of very fine timber still in this county. The timber exported from the county has been the chief item of export for several years, and was floated down the Kentucky river.

The roads of the county are very bad, and the greatest need of the county is better roads. The roads of this county, taken with those of Leslie, Letcher and Harlan, are among the worst in the State, and in order to get better roads it is necessary to have a better road law in the State.

Hazard is the county seat and is located near the center of the county on the Kentucky river. It is the seat of a good

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Baptist college, which is doing a wonderful lot of good for that section of the State.

PIKE COUNTY.

Pike County was established in the year 1821, out of part of Floyd County, and was named in honor of Zebulon M. Pike, a brigadier general in the war of 1812 with Great Britain, and who was mortally wounded April 27, 1812, at York, the capital of Upper Canada, by the explosion of the British magazine. The county was the 70th in the order of formation, and one of the two largest in territory in the State, Pulaski being the other. In 1870 a small portion of its territory was taken in the formation of Martin County; also a small portion was taken off the southern part and attached to Letcher County in 1883, when Knott County was formed out of portions of Letcher, Floyd and Perry. The official census of 1910 gives Pike County a population of 31,679. The population of 1900 was 22,686, making the increase 8,993 during the last decade—nearly 40 per cent.

At the time of the formation of the county there were no railroads in the United States, and the only means of transporting freight into and products out of the county was by the use of barges and flat bottom boats on the Big Sandy river, which runs through the counties of Pike, Floyd, Johnson, Lawrence and Boyd, emptying into the Ohio river at Catlettsburg, Ky., and this condition continued until just prior to the late Civil War, when steamboats began to be operated on the river during the winter and spring seasons.

The first railroad built into the county was a branch line of the Chesapeake and Ohio, completed in 1905 to the mouth of Elkhorn creek near the Virginia State line, since which time steamboat navigation has ceased, except from the little city of Louisa to Catlettsburg, a distance of thirty miles, where there is slack water navigation all the year round.

Prior to the advent of the railroad there was no mining or shipping of coal from the county the chief industry being the lumber business, and this was carried on by cutting the timber into "saw-logs," hauling them to the river where it could be done without too much expense, or "splash-

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ing" them out of the heads of the creeks to the rivers, by means of "splash" damns. The logs were then put into large rafts and floated to Catlettsburg, the timber market for the Big Sandy Valley, and great quantities of timber is still carried to market this way at the present day.

Courts of justice were established, co-existent, with the county, which have been continued almost in the same name and form to the present day. The courts or original jurisdiction are the Circuit Courts, which is the principal court for the trial of civil and criminal cases, the Quarterly Courts, County Courts, Police Courts and Courts of Justices of the Peace, all except the Circuit Courts being courts of limited juridiction. The number of Circuit Courts were greatly augmented on the adoption of the present constitution, in 1890, on account of the great increase in population and the business of the country, and now each county, instead of having two terms a year as formerly, has three, the terms in Pike County being limited to twenty-four days each.

Through intelligent legislation, the public free schools of the State have been greatly improved and put upon a higher plain; teachers are better paid, and the full term is now six months out of the year. Teachers are being better prepared for teaching through the establishment of two Normal Schools for the training of teachers, supported by the State. The teachers of the public schools of Pike County receive more pay per scholar than any county in the State, on account of the interest paid by the State on its county bonds now held by the State as a trust fund for that purpose. They are educated right up to date, high-toned and moral, and the peer of any teachers in the State.

Besides the free schools there was established at Pikeville, our county seat, some twenty years ago, Pikeville Collegiate Institute, now changed to Pikeville College, under the management of the Presbyterian Church, for the education of both sexes, which has been of untold benefit to Pikeville and Pike County, both from an educational and moral point of view. The College is in a healthy flourishing condition, has a splendid faculty, and the attendance is larger than at any time during the history of the institution. Young men and young ladies desiring a higher education need not go away from home to get it. This same church has established a school, Phelps Academy, at Phelps,

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Pike County, on Peter Creek, for the education and training of both sexes, which has very materially aided in building up a higher and better civilization in that community. It also proceeds along industrial lines.

Various church organizations exist all over Pike County, and in nearly every neighborhood a church building, be it ever so modest, is found. The ruling denomination of the country districts is the Regular or Primitive Baptist Church. Its people, although it is primitive and crude in its form and manner of worship, compared with that of some other denominations, are very much devoted to their cause, and much real religion exists among them. Their church buildings are not of the highest type and often they are constructed of hewed or round logs cut from the forest in the neighborhood, but each member contributes his little mite in money or labor toward its construction. Other denominations, such as Presbyterian, Christian or Disciples of Christ, Missionary Baptist and the two branches of the Methodist Episcopal Churches exist in portions of the county, and have some splendid church buildings. In Pikeville three modern and up-to-date church buildings have lately been erected by the Christian, Presbyterian and Baptist Churches, respectively, all lighted wth electricty and all well arranged. The two branches of the Methodist Church, each, have good, commodious, but modest, church buildings, with a good seating capacity, and lighted with electricity.

The people of Pike County are fairly well educated, some graduates of various institutions of learning, and the percentage of illiteracy is, perhaps, smaller than that of any of the mountain counties. Their civilization and morals are equal to that of any in the State, though their manners may not always be that of the best, nor is the savage tendency as great here as in other parts of the State. In fact to the credit of Pike County's civilization, it can truthfully be said no one has ever been lynched or burned at the stake from crime, though just as great provocations have occurred here as elsewhere. That pure Anglo-Saxon blood that flows through the veins of the mountain people of Kentucky is so constituted as to give every man a "square deal" and a chance for his life.

In natural resources, Pike County is very rich. The whole county is underlaid with merchantable coals, consist-

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ing of both hard and soft, as well as cannel coal occasionally. Since the advent of the railroad coal is being mined and shipped in large quantities to all parts of the country. As fine a coking coal as can be found anywhere is now being mined and coked in Pike County, in the Marrowbone district on Marrowbone Creek. The percentage of fixed carbon is greater by actual test than that of the famous Connelsville coke. A furnace test has also proved it to have as good burden bearing qualities as any that is produced.

One of the greatest industries of the county is the lumber business. Saw mills are being placed in various parts of the county, which are rapidly depleting the forests and manufacturing it into all kinds and classes of lumber and building materials, which is being shipped daily in large quantities; also millions of railroad ties are shipped annually by rail and by water. The commercial business of the county is very great, and increasing yearly. The emigration from the county is small, while the immigration to the county is large, as witness the great increase in population during the last ten years, as heretofore set out.

Pikeville, the county seat of Pike County, is situated on the southwest bank of the Louisa Fork of Big Sandy River, in the northern end of the county. It was incorporated in 1824, and in 1879 had a population of only 140. The present population (the official census not yet being announced) is placed at 1800. It is a city of the fifth class and has a substantial, healthy growth; has a splendid citizenship, whose people have the spirit of progress about them. A business Men's Progressive Association has been recently organized with a membership of over one hundred business men of Pikeville and Pike County, for the purpose of aiding the material advancement of Pikeville and Pike County. Real estate in Pikeville is high for a city of its size and situation, but it is always worth the money, and in fact is gradually advancing. The city has five churches, as heretofore mentioned; A college, besides a private school; two wagon and blacksmith shops; two wholesale grocery houses; two wholesale and retail hardware stores; a spoke and handle factory; one builders' supply house; a large three-story botanic drug house for the wholesale of crude drugs; three jewelry and repair shops; plenty of retail stores of all kinds; is lighted with electricity; has a water works and sewer system, and telephone exchange

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with long distance connections. Perhaps the best of all is, Pikeville is a "dry" city, and but little drunkenness is ever seen upon the streets, making it a most desirable place in which to live. The Circuit Judge of this judicial district, Hon. A. J. Kirk, has recently located here, and the Congressman from the Tenth District of Kentucky, Hon. John W. Langley, some two years ago purchased a small tract of land in the suburbs, upon which he built an elegant and commodious residence.

Elkhorn City, at the terminus of the C. & O. Ry., at the mouth of Elkhorn Creek, is a town of some three or four hundred population, and is likely to be a place of considerable importance in the future, as two other railroads, the Clinchfield, Carolina & Ohio, and the Kentucky River Branch of the Louisville & Nashville, are headed that way. The "Breaks," the canyon of the Big Sandy River, where the natural scenery is very fine, is near this town.

Hellur, at the head of Marrowbone Creek, is a mining town, surrounded with many coal operations, including a coking plant. Shelbiana is another mining town, situated at the mouth of Shelby Creek, from which place a branch line of the C. & O. will soon be constructed to the head of Shelby Creek, into the celebrated Elkhorn coal field, and connect with the L. & N. R. R. Other railroad towns of importance on the C. & O. Ry. are The Forks and Marrowbone.

Borderland and Freeburn are coal mining towns on Tug River, along the line of the Norfolk & Western Ry. Other small coal operations in the county are Kewanee, Cabin Branch and Wagner.

POWELL COUNTY.

Powell County is located in the eastern part of the State among the foothills of the Cumberland Mountains.

The surface of this county is very uneven and much broken with the mountains, or hills running from the Cumberland Mountains, except along the streams where the river and creek bottoms broaden out into level valleys.

The soil of this county, in the lowlands, is of a sandstone formation, formed from the decay of the sandstone and vegetable matters, and has a clay subsoil, and is very productive. While the tops of the mountains are of limestone formation, the soil is thin.

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Agriculture is the chief industry of this county and the principal crops are corn, wheat, hay, oats and tobacco. Corn is the chief crop of this county. Tobacco has lately been introduced into the county, as a commodity of export and bids fair to become one of the chief industries of the county.

This county is also rich in minerals, such as coal, iron ore, clay and cement. Natural gas and oil are also found.

The county roads of this county, like most of the mountain counties, are not very good.

Stanton, the county seat, is located near the center of the county on the Red River and on the L. & E. Railroad, and has a populaion of about 600 people.

PULASKI COUNTY.

Pulaski County is located in the southern part of the State in the foothills of the Cumberland Mountains. The surface is hilly and broken, but much of the county is undulating and almost level. The soil of this county is of both sandstone and limestone formation, and is of good farming quality. The chief industry of the county is farming, and the chief crops raised are corn, wheat, oats, hay, tobacco and buckwheat. More buckwheat is raised in Pulaski County than is raised in any other county in the State. Much attention is also given to the raising of vegetables, and truck gardening is an important industry in this county.

The county is drained by the Cumberland River and its tributaries. South Fork of Cumberland, Buck Creek, Rock Castle River, Pitman and Fishing Creeks are the principal tributaries to the Cumberland in the county.

The county is rich in minerals, the chief of which are coal, lead, zinc, iron ore and clay. The southeastern and eastern part of the county is the seat of the rich coal deposits, and much timber still remains and lumbering is still an important industry.

Live stock raising is as important industry of this county. Many horses, cattle, sheep and hogs are raised and fed for the markets, and the stock exported from this county bring to the farmers an abundance of money.

The county roads of Pulaski County are mostly the ordinary dirt roads, with the exception of a few miles of turnpikes. The county is trying to add to the mileage of pikes each year.

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Somerset, the county seat of Pulaski County, is located in the southern part of the county on the Q. & C. Railroad, and is a thriving little city of about 7,500 inhabitants. It has several factories, shops, good churches, schools and banks.

ROBERTSON COUNTY.

Robertson County is one of the newest counties in the State and also one of the smallest.

Robertson County is bounded on the north by Bracken, on the east by Mason, on the south by Nicholas and on the west by Harrison. It is watered and drained on the south by the Main Licking River and on the north by the north fork of the Licking Rivers and their tributaries, West, Salt Lick and Cedar Creeks.

The surface of this county is hilly and broken. The soil is of limestone formation and well adapted to the growth of most all the agricultural products common to this climate, corn, wheat, oats, hay, tobacco and the vegetables are the chief crops. This is an agricultural county and farming and stock raising are the chief industries. The products of the county are most all of them consumed in the county, except the tobacco, which is exported and brings a nice price and is a source of much income to the farmers. The tobacco of this county is of a very fine quality, and demands good prices. Much attention is given to stock raising, and a large number of cattle, sheep and hogs are raised here for the markets, and are another source of cash income to the farmers. Many fine dairy herds are found in Robertson County.

There is also found in this county both oil and gas, but neither of them have yet been developed.

Mt. Olivet, the county seat, is situated in the central part of the county, and is a beautiful upland town, being located on a table land. It has about 500 inhabitants. The streets are lighted with natural gas, has two schools, five churches and two banks.

ROCKCASTLE COUNTY.

Rockcastle County is located on the southeast part of the State, 129 miles southeast of Louisville, in the foothills of the Cumberland Mountains. The surface of the county is very irregular and broken. The spurs of these mountains extend out into this county in broken hills and knobs.

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The soil of the county is principally limestone formation and produces well. Farming is the chief industry, and the principal crops are corn, wheat, oats, hay, tobacco and vegetables. Some alfalfa is raised and seems to thrive well. It is only for the last few years that the farmers have tried to grow alfalfa and it bids fair to become of great importance to the farmers.

There is still standing, in this county, a good portion of timber. About 35 per cent of the entire county is covered with timber, and the principal kinds are oak, hickory, maple, beech, poplar and chestnut. The best of the timber, however, has been cut out and marketed.

There are several fine stone quarries in Rockcastle County. Some of the finest quarries of building stone in the United States are found in this county. There is also a great deal of attention given to the making of brick and the burning of lime. This is an important industry in this county, and the lime shipped from the county forms one of the principal exports.

The county has some piked roads, but the greatest needs of the county are better roads and manufacturies.

Mt. Vernon, the county seat, is located in the central part of the State on the Louisville & Nashville Railroad, and is a town of about 800 people.

ROWAN COUNTY.

Rowan County is situated in the eastern part of the State among the foothills of the Cumberland Mountains, and the surface of the county is very much broken with the hills and spurs of these mountains.

The soil is of sandstone and limestone formation and has a diversified soil. A portion of the county is a black sandy loam, while other parts of the county are of pure lime formation.

The soil of the county is fairly rich and produces very well. Farming is the chief industry of the county, and the principal crops are corn, oats, wheat and tobacco. This is also a good fruit county, and much fine fruit is grown. Vegetables are also grown here to some extent, and grasses, such as timothy, clover and red top, thrive well.

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Much attention is given to the stone industry in this county and many fine quarries are being operated. The stone of Rowan County varies in thickness of strata and kind. Some of the stratas are only about three inches thick, while others are from four to six feet. These stratas of stone are located one over the other, and the stone, in its native State, is very soft, but on being exposed becomes to be very hard and durable.

There is a great deal of timber in this county and lumbering is an important industry. There are many lumber mills, spoke factories, stave factories and heading factories in the county.

The roads of the county are very bad, all being the old-fashioned dirt roads. There is an abundance of good road material in the county.

Morehead, the county seat, is located near the center of the county on the Lexington and Ashland Branch of the C. & O. Railroad. It is a town of about 800 inhabitants, and has good schools, churches and one bank.

RUSSELL COUNTY.

Russell County is located in the southern part of the State. Cumberland River flows through the southern part of the county and is the only means of shipping that the county has. The county is drained by the Cumberland River and its tributaries, the chief of which are Fishing, Indian, Wolf and Greasy Creeks.

The population is about 11,000, and the area of the county is about 300 square miles.

The surface of this county is somewhat broken and hilly, while there is a great deal of high level land in the county.

The soil of this county is a mixture of sandstone and limestone, and produces reasonably well. Farming is the chief industry, and the chief crops are corn, hay, oats, wheat and tobacco. Not very much tobacco has been raised until recently. The farmers are now beginning to grow tobacco in greater quantities, and it is proving to be a success in the county. The dark tobacco is chiefly grown here.

The county has some very attractive natural curiosities, such as caverns, etc. About two or three miles below Creelsboro, on the Cumberland River, there is an immense big

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cavern running entirely through the mountain and a big Creek runs through this opening and immediately flows into the river. There are several other caverns in the county.

Jamestown, the county seat, is located in the southern part of the county and is a town of about 300 people. The greatest needs of the citizens of this county are better roads and a railroad.

SCOTT COUNTY.

Scott County is located in the north central part of the State, and is strictly a blue grass county.

The surface of the county is undulating, with a few low hills.

The soil is of limestone formation, and is very fertile. Agriculture and stock raising are the chief industries of this county. The chief crops are corn, wheat, hay, oats, hemp, vegetables and tobacco. This is one of the best farming counties in the State. The tobacco crop of this county ranks among the largest in the State. The yield per acre is also among the best in the State.

Much attention is given to the raising of stock in this county, and many fine stock farms are located here, among which are some of the famous race horse farms. This county is also noted for its fine cattle and sheep. Many cattle are exported into foreign markets and the stock export trade forms a great item in the exports of the county. Many fine dairy herds are also found here, and dairying is an important industry. Many sheep and mules are raised and shipped from this county also.

The county is well supplied with railroads, the Q. & C. crossing the county from south to north, and the L. & N. Railroad crossing it from east to west, and an electric line running from Georgetown to Lexington.

The county has several miles of fine turnpikes, and the roads of the county are reasonably good.

Georgetown, the county seat, is located in the southern part of the county on the banks of the Elkhorn River. The population of the town is about 6,000. The Q. & C. and L. & N. Railroads both pass through this town. It is a thriving city, and has many up-to-date features. The Indian Refining Company has extensive refineries here. The town has good schools, churches and several good banks.

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SHELBY COUNTY.

Shelby County is located in the northeastern part of the State, and bounded as follows: On the north by Oldham and Henry, on the east by Franklin, on the south by Spencer, and on the west by Jefferson. The surface of this county is mostly level.

Shelby County is one of the richest counties in the State. It is strictly a bluegrass county. The soil is of limestone formation and very fertile. Agriculture is the chief industry and the principal crops are corn, oats, wheat, hemp, hay, tobacco and all the vegetables common to this climate. Alfalfa is also given some attention in this county and is proving a success. The soil is very rich, and the crops produced here are very abundant and among the best in the country. It is one of the best tobacco counties in the United States. The tobacco raised here is the celebrated burley, and of a very fine quality.

Much attention is given to stock raising. Horses, cattle, sheep and hogs are raised in large numbers, and are one of the most valuable exports of the county. Many fine dairy herds are kept in this county and dairying is an important industry.

This county is also noted for fine schools. The first Agricultural Society formed in the State was organized here.

The transportation facilities are good, the L. & N., Southern and C. & O. Railroad Companies all having roads running through the county.

Shelbyville, the county seat, has about 5,500 inhabitants, and is located on the L. & N. R. R.

The county has many miles of fine piked roads, and they are kept in good condition.

SIMPSON COUNTY.

Simpson County is located in the extreme southern part of the State, and is one of the Tennessee border counties. It is one of the smallest counties in the State, but what it lacks in size is made up by the fertility of the soil. Its surface is almost level, except in some places where it is slightly rolling. The soil is of a deep rich alluvial formaton and produces well.

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Agriculture is the chief industry of the county and the principal crops are corn, wheat, oats, tobacco and hay, though much attention is given to the raising of vegetables, which grow abundantly. All the crops grow in this county in great abundance.

Much attenton is also given to stock raising. Many cattle are raised and shipped into the markets, and constitute one of the principal exports. The tobacco raised in this county is also an important export and brings in much money to the farmers.

Franklin, the county seat, is located near the center of the county on the Louisville & Nashville Railroad. The shipping facilities of the county are fairly good. The county seat is a thriving town of about 3,500 inhabitants. The greatest needs of the people in this county are better roads and a modern grain elevator.

SPENCER COUNTY.

Spencer County is located in the northern part of the State and bounded as follows: On the north by Shelby, on the east by Anderson, on the south by Nelson and on the west by Bullitt and Jefferson.

The soil of this county is of limestone formation and is productive. Agriculture and stock raising are the chief industries. The principal crops are corn, wheat, hay, oats, vegetables and tobacco. The soil of this county produces abundant crops of the above named products and a good quantity of farm products are exported.

Much attention is given to the raising of stock, such as cattle, sheep and hogs. Taylorsville is known to be one of the best stock markets in the whole State.

There is a great deal of timber still standing in this county.

The county also has very fine schools, and is known as one of the best school counties in the State, both for public and for private schools.

The county has very good roads and there is about ninety or one hundred miles of turnpike in the county.

Taylorsville, the county seat, is located near the center of the county on the Louisville & Nashville Railroad.

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LIST OF DAIRYMEN FOR SPENCER COUNTY AND ADDRESSES.

Speed & Pardo	Taylorsville
Speed & Ross	Taylorsville
Green Hayes	Taylorsville
Annie E. Walker	Taylorsville
Larimore & Calvert	Taylorsville
Larimore & Jackson	Waterford
W. L. Vandyke	Taylorsville
G. W. Downs	Taylorsville
J. W. Milligan	Little Mount
S. F. Crabb	Taylorsville
Sam Crabb	Taylorsville
F. B. Smith	Taylorsville
John S. Truax	Taylorsville
R. L. Watson	Taylorsville
Frank Williams	Taylorsville
J. W. Howerton & Bro	Taylorsville
J. C. Collings	Taylorsville
G. W. Brown	Elk Creek
B. T. Black	Taylorsville
A. J. Offutt	Taylorsville
S. T. Offutt	Taylorsville
Knox Brown	Taylorsville
J. K. Miller & Son	Taylorsville
W. H. Reynolds & Son	Taylorsville
G. A. McDavitt	Elk Creek
W. H. Allen	Elk Creek
W. A. Addams	Taylorsville
J. T. Meyers	Taylorsville
Joseph Tucker	Taylorsville
W. T. Taylor	Taylorsville
E. T. Hollaway	Taylorsville
M. & C. Pittenger	Taylorsville
Newland Black	Taylorsville
W. C. Fulkerson	Taylorsville
E. D. Hammond	Taylorsville
R. H. Snyder	Taylorsville
William Howerton	Taylorsville
J. D. Tucker	Taylorsville
J. R. Marrattay	Taylorsville
James S. Shelbourn	Taylorsville
Thad Cheatam	Taylorsville
J. W. Sullivan	Taylorsville
A. T. Beard	Taylorsville
Carpenter & Vandyke	Taylorsville
J. H. Dulin	Taylorsville
George Carrithers	Taylorsville
G. Will Snyder	Taylorsville
G. E. Crafton	Taylorsville
A. R. Crutcher	Taylorsville
Leslie Figg	Taylorsville
D. M. McClaim	Taylorsville
T. J. Quinley	Taylorsville
W. M. Thompson	Taylorsville

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Zack Shields	Taylorsville
M. W. Shelbourn	Taylorsville
J. S. Houglin	Taylorsville
J. C. Durrett	Taylorsville
J. S. Shelbourn	Taylorsville
J. W. Wakefield	Taylorsville
J. W. McClain	Taylorsville
C. J. Duvall	Taylorsville
J. C. Shelbourn	Taylorsville
R. J. Allen	Elk Creek
J. R. Thomas	Normandy
Roy Drake	Taylorsville
A. D. Nutgrass	Taylorsville
W. H. Allen	Elk Creek
D. B. Finley	Wilsonville
C. W. Stallard	Elk Creek
George and Tom Wigginton	Elk Creek
Greenwal & Skidmore	Taylorsville
John C. Williams	Taylorsville
Lee Willson	Normandy
C. B. Crabb	Taylorsville
W. B. Cotton	Taylorsville
Sam Sullivan	Wakefield
T. R. Muir	Normandy
B. D. Stout	Normandy
W. E. Stout	Normandy
W. C. Wills	Normandy
C. W. Muir	Normandy
Noel Hart	Normandy
G. C. Wells	Normandy
J. M. Ashby	Normandy
T. L. Jewel	Normandy

TAYLOR COUNTY.

Taylor County is located in the central part of the State and is bounded as follows: On the north by Marion County, on the east by Casey, on the south by Adair and Green, on the west by Green and Larue.

The surface of this county is undulating and in some parts is even hilly and broken. The Muldraugh Hills run through this county, and many knobs of them are perceptible here.

The soil is of limestone formation on a clay subsoil and is very productive. Agriculture is the chief industry and the principal crops grown are corn, wheat, oats and tobacco. All the farm products of this county are consumed by her home people except the tobacco, and it is shipped into the market, and is one of the mediums by which the people realize their money from outside the county. Some portions of the county are very poor, as to soil, and the yield is

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small. In these thin parts the principal industry is fruit raising. Fruit grows exceedingly well in this section of the county.

The county has a few miles of railroad which is owned and operated by the Louisville & Nashville R. R. Co. and is known as the Greensburg Branch. The county also has several miles of good macadamized roads.

Campbellsville, the county seat, is located near the central part of the county on the L. & N. R. R. and Buckhorn Creek. The town has good churches, good schools and banks.

TODD COUNTY.

Todd County is located in the southwest part of the State, and bounded as follows; on the north by Muhlenburg, on the west by Logan, on the south by Tennessee, and on the west by Christian County.

The soil is very fertile in the southern part, but not so much so in the northern part. The northern part is a good substantial clay bottom and the soil can easily be made to bring good crops. The chief industry of the county is farming, and the chief crops are corn, wheat, tobacco and hay. The chief export of the county is tobacco, which brings to the farmers a good income.

Elkton, the county seat, is located near the center of the county and at the terminus of a branch of the L. & N. Railroad. It is a town of about 1,600 inhabitants; has good schools, good churches, macadamized streets, and is an up-to-date little city.

TRIGG COUNTY.

Trigg County was founded in 1820, of a part of Christian and Caldwell Counties, and was named in honor of Colonel Stephen Trigg. It was the sixty-sixth in order of formation.

It is located in the southern part of the State on the Tennessee line.

Cumberland River flows through the western part of the county and the bottom lands along this river and Little River are very fertile.

The surface of the western portion is very hilly and is not nearly so fertile as the eastern portion of the county. However, it supports a considerable population.

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The soil is limestone or clay soil and is founded on a clay, under which is limestone.

The western portion of this county is very rich in iron ore, which is waiting to be worked, and will make this county very rich when the mines are properly developed.

Cadiz, the county seat, is a town of about 1,005 inhabitants located on the north bank of Little River, and is the largest town in the county.

Cerulean Springs is a summer resort, and the next in importance. Wallonia, Canton, Trigg Furnace and Golden Pond are smaller towns.

Timber, 66,837 acres; cleared, 219,641 acres.

Trigg County is on the Tennessee line, between Christian County on the west and Tennessee River on the east. This river is paralleled eight or ten miles east by the Cumberland, which, with its tributaries, drains the greater part of the county. The ridge between the rivers rises nearly 300 feet above them, with a short, abrupt west slope and a gentle east slope. East of the Cumberland is a rolling country with low hills. The area of Trigg County, is 307,840 acres. Good water transportation is afforded by the navigable streams, together with the principal tributary of the Cumberland, Little River, which is available for floating timber and ties. Rail transportation is not so good as in most of this region. A line from Cadiz, the county seat, connects with the Illinois Central Railroad which cuts across the northeast corner of the county.

Agriculture is of the greatest importance, especially east of the Cumberland. Of the forest industries, the making is the chief, with an estimated out-put of 638,000 ties, 90 per cent. of the total out-put of forest products. There are about sixteen small saw mills in operation. Except for a few comparatively small holdings in the south-central part, and one tract in the north-central section of the county, the best timber is practically gone. Sixty per cent. of the land is in forest, of which about one-fourth is of the bottomland type. About 10 per cent. of the total area is in old fields and probably 30 per cent. may lie as absolute forest land.

Fire has done serious damage, killing half grown trees over large areas. Protection from fire is essential for the well-being of the forest. The enforcement of stock law would also be of great benefit to the young growth. Con-

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servative forest management should be applied with the purpose of increasing the productiveness of the forests, and obtaining a permanent supply to meet the most urgent demands. This policy is being carried out, with the advice of the forest service, on a tract of coaled-over sprout land, located between the Cumberland and Tennessee Rivers. The charcoal industry makes very close utilization possible, and the inferior and defective trees may be removed down to two inches in diameter, leaving twenty to thirty trees of the better species per acre to provide ties and saw logs. When there is no market for such small material methods can not be so intensive and the improvement of the stand must be brought about more slowly, by cutting the inferior species as close as market conditions permit.

TRIMBLE COUNTY.

Trimble county is located in the northern part of the State, and bounded as follows: on the north by the Ohio River, on the south by Henry and Oldham Counties, on the east by Carroll and Henry, and on the west by the Ohio River.

The surface of this county is very hilly and irregular. The soil is of both lime and sandstone formation. Portions of the county are very fertile, and well adapted to the raising of farm products, such as corn, wheat, oats, hay and tobacco. This county is also excellent for the production of fruit, and the peach crop is one of the chief exports from the county. Much attention is given to the raising of fruit of all kinds.

Oil and gas have also been found in this county, and bid fair to become important among the cash commodities of the county. The county has several creeks and small rivers running through it, and is bounded for several miles on the north and west by the Ohio River, giving it excellent drainage, and good shipping facilities.

There are several saw mills and distilleries in the county

The county has several miles of turnpike in it, and has reasonably good dirt roads. It has good schools, good churches and several industries.

Bedford, the county seat, is located in the central part of the county and is a town of about 500 inhabitants.

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UNION COUNTY.

Union County is located in the western part of the State and bounded on the north by the Ohio River and Henderson County, on the east by Henderson and Webster counties, on the south by Crittenden and on the west by the Ohio River.

The surface of this county is generally smooth and very nearly level. The Ohio River bounds the county for a distance of about forty miles, and the Louisville and Nashville, and Illinois Central Railroads both run through the county, thus giving the farmers and coal operators in this county very fine shipping facilities.

The soil of this county is of a rich sandy loam formation, and is very fertile. Agriculture is the chief industry and the principal crops are corn, wheat, oats, hay, tobacco and vegetables. The soil is very rich and produces abundant crops. The soil is exceedingly well adapted to the raising of vegetables.

The county is also very rich in her minerals, the chief of which is coal. Almost the entire county is underlaid with very fine seams of bituminous coal. These coal fields are being rapidly developed and coal mining is one of the principal industries of this county.

There is some alfalfa grown in this county. It has only recently been introduced but seems to be well adapted to this class of soil, and is doing nicely.

Morganfield, the county seat, is located near the center of the county at the junction of the L. & N. and I. C. Railroads. It has a population of about 2,500 inhabitants. It has most all the modern conveniences of the larger cities.

WARREN COUNTY.

Warren county is located in the southwestern part of the State and bounded as follows: on the north by Edmonson and Butler, on the east by Barren and Allen, on the south by Simpson and Allen, and on the west by Logan and Bullitt Counties. The county is drained by Green and Big Barren Rivers and their tributaries. They are both navigable and furnish cheap transportation.

The surface of the county is generally undulating. In a few places it is hilly and rolling, but not very rough and broken.

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The soil of the county is of a lime and clay formation, and is very fertile, and durable. The chief industry of this county is farming, and the chief crops are corn, wheat, oats, hay, tobacco and vegetables. The river bottoms of this county are low, level and very fertile. They produce abundant crops of all kinds that are adapted to this climate.

Stock raising is also an important industry of this county. There are several miles of good turnpike in the county, and the county officials try to add to it each year. The dirt roads are fairly good.

The county has good schools, good churches and the banks are in good condition.

Bowling Green, the county seat, is located in the south-central part of the county on the Louisville and Nashville Railroad and is an up-to-date little city.

WASHINGTON COUNTY.

Washington County is located near the geographical center of the State, and is one of the first counties to be organized after the State was admitted into the Union, and was the first piece of territory in the country named for the illustrious Washington. Washington county is bounded on the north by Nelson and Anderson, on the east by Mercer and Boyd, on the south by Marion, on the west by Nelson County.

The surface of this county has a general dip from southwest to northwest, there is in a portion of the county an exposed strata of what is known as the honey comb coral about five feet in thickness.

This county is noted for its fine water, and especially that coming from the famous Tatham well, which is almost absolutely pure from any organic matter whatever.

The soil of this county is reasonably productive, and the chief industry is farming. The principal products are, corn, wheat, oats, rye, barley, hay and tobacco. Tobacco is the most important crop raised in the county, and is the chief article of export.

Stock raising receives a great deal of attention in this county and some very fine stock is raised and shipped from this county.

Springfield, the county seat, is located near the center of the county on the Louisville and Nashville Railroad. It

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has a population of about 2,500 people, is an up-to-date little city, has waterworks, electric light plant, loose leaf tobacco redrying plant, good schools, good churches and good strong banks.

The county has good turnpikes, and they are kept in good condition. The people need more factories.

WAYNE COUNTY.

Wayne County is located in the extreme southern part of the State, and is the third largest county in the State, and bounded on the north by Russell and Pulaski, on the east by Pulaski, on the south by Tennessee, on the east by Clinton and Russell Counties.

The surface of this county is hilly and broken, the spurs of the Cumberland Mountains extending out into the southern part of the county. The soil is productive, and much attention is given to farming. Agriculture is the chief industry of the county and the principal crops are corn, wheat, oats, hay, vegetables and tobacco. Much attention is also given to the raising of stock. Much of the county is underlaid with a very fine quality of bituminous coal, but owing to the fact that there are no railroads in the county it is not being mined.

Wayne County has the distinction of being the greatest oil producing county in the State. There are many good producing wells now in operation in the county. The oil is pumped through a pipe-line to Parkersburg, West Virginia to the refineries.

The county is drained by the Cumberland River and its tributaries and the soil along these streams is very fertile.

Monticello, the county seat, is located near the center of the county. It has about 1,600 inhabitants, has four churches, two banks, one graded school and a roller mill and sawmill.

The greatest needs of the people in this county are better county roads and a railroad over which to ship their coal, timber and oil products, as well as their live stock and farm products.

WEBSTER COUNTY.

Webster County was formed in 1860 from parts of Hopkins, Union and Henderson Counties.

It lies between the Green and Tradewater Rivers, covering two hundred and twenty-seven thousand, (227,000) acres,

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of which about one-fifth is bottomland. Between the flood plains of the sluggish streams, irregular ranges of hills rise up to an elevation of over six hundred (600) feet above sea level, or over two hundred (200) feet above the stream beds.

In addition to the two rivers on the east and west boundaries, three railroads give excellent transportation facilities. The Louisville & Nashville Railway traverses the county in the east with its Henderson division, and the southwest with its Morganfield branch from Madisonville. The Illinois Central has a branch from Blackford to Dixon, the county seat, while the Kentucky Valley operates a line from Providence to Wheatcroft. The wagon roads are kept in fairly good condition by modern machinery, the cost coming out of the general fund. Coal mining thrives in the southwestern part of the county, and keeps the three railroads in that section well supplied with business. Lumber, ties and props are the chief forest products and twenty (20) saw-mills are in operation.

About three-fourths (3-4) of the present forest is of the upland type. Perhaps 10 per cent. of the county may be classed as absolute forest land, including many of the old fields, too poor and washed for cultivation.

The young growth is not very promising and the usual succession of logging and fire, often combined with grazing, has resulted in large areas covered with scrubby hickory and oak sprouts, mixed with dogwood and other shrubs.

In the western part of the county there is a good demand for mining timber and props, as the mines use nearly a million board feet a year. Rather intensive forest management should be possible here, but nothing has been done along this line, except by one company, which is beginning work similar to that which has been undertaken in Hopkins County. This company is also creosoting the timber to be used in situations where durability is required.

Webster County was the 109th in the order of formation and received its name from the noted statesman, Daniel Webster.

The county contains much fertile bottom land, and a large portion is quite level; yet the water shed between Green and Tradewater Rivers extends through the central part of the county, rendering this portion very hilly. The soil is some-

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what like that of Union County; a sandy soil and rather dark in color, on a clay foundation, and produces fine crops of corn, tobacco, hay and wheat.

Road building is wonderfully impeded by the absence of stone, there being very little stone of any kind in the county.

Dixon, the county seat, is a town of about eight hundred (800) inhabitants; is located in the central part of the county at the terminus of the Illinois Central Railroad.

Providence is the largest town in the county and is a very important mining center. While there are no very large towns in this county, there is quite a number of mining towns however.

There are approximately nineteen thousand, five hundred (19,500) acres of timber land and one hundred seventy-nine thousand, three hundred thirty-nine (179,339) acres of cleared land in the county.

WHITLEY COUNTY.

Whitley County is located in the southeastern part of the State, and bounded on the north by Knox and Laurel, on the east by Knox and Bell, on the south by Tennessee and on the West by Pulaski. Whitley County has 32,500 inhabitants. It is one of the largest counties in the State.

The surface of this county is hilly and broken. The spurs of the Cumberland Mountains penetrate the entire county, and it is rugged in some parts, while along the rivers the valleys are level and very fertile.

Some attention is given to agriculture in this county, and the principal crops raised are corn, hay, oats and vegetables. Tobacco has recently been introduced into this county, and as well as in some of the other mountain counties, it seems to be well adapted to that section of the State, and the yield is good and quality excellent. There is not enough food stuffs raised in this county to supply the demand and quite a bit must be shipped in.

The principal industry of this county is coal mining. Almost the entire county is underlaid with good bituminous coal, and it is being rapidly developed. Thousands of men are employed in the mining of this product.

Oil and gas are also found in this county. They are not being developed to any great extent.

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Cumberland River winds her way through this county and much beautiful scenery abounds along its banks where it is skirted by some of the rugged peaks and spurs of the Cumberland Mountains, which approach the river and form a wall several hundred feet of almost perpendicular rock cliffs.

Williamsburg, the county seat of this county, is located near the center of the county on the Cumberland River and L. & N. R. R.

Williamsburg is noted for its fine schools. Here is located one of the biggest Baptist schools in the State, and hundreds of young men and women go there from all parts of the State to attend this school. It also has a very fine graded school, which is run by the county school board.

The county roads of this county are very bad, and the greatest needs of the people are better roads and manufacturing establishments.

WOLFE COUNTY.

Wolfe County is located in the east central part of the State and is bounded on the north by Morgan and Menefee, on the east by Magoffin and Breathitt, on the south by Breathitt and Lee, on the west by Powell and Estill Counties.

The surface of this county is very hilly and broken. It is in the heart of the mountains. The principal wealth of this county is in her mineral and timber. Most all the merchantable timber that is in reach of the rivers and railroads has been shipped out, and a good portion of the timber wealth of the county has been destroyed by the pioneer farmers clearing the land for farming purposes, and either cutting or deadening the timber off the lands.

The principal minerals are coal, oil and gas. The oil-producing portion of the county has almost all been developed, and the oil output is falling away, and the laboring classes who have been engaged in the oil operations are going back to the farms, engaging in agriculture. The chief crops raised in this county are corn, oats, vegetables, a little wheat and a little tobacco.

Some attention is given to raising stock. This county is well adapted to the raising of sheep on account of the good grass lands and fine water. There are thousands of acres of worn out land in this county which is too thin to bring agri-

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cultural products save grass, and would be fine for the raising of sheep and goats.

Not much attention is given to the development of the coal of this county on account of the railroad facilities. There are, however, some mines being operated in the county but not very many. The quality of the coal here is very fine, and the quantity great. The county roads of the county are bad, and the greatest needs of the people here are better roads and more railroads.

Campton is the county seat and is located near the center of the county at the terminus of a narrow gauge railroad. The population of Campton is about 800 people. The county has good schools and churches.

WOODFORD COUNTY.

Woodford County is located just north of the central part of the State and bounded on the north by Franklin and Scott, on the east by Fayette and Jessamine, on the south by Mercer and on the west by Mercer and Anderson.

This county is in the center of the bluegrass region of the State and is known as the Asparagus Bed of the world. The surface of the county is generally rolling or undulating with many small streams flowing through the county to the Kentucky River.

The soil of this county is of a deep rich loam with a clay subsoil underlaid with limestone which contains very fertile materials.

Agriculture is the chief industry of this county. The crops are wheat, tobacco, corn, alfalfa, hemp, oats, hay and bluegrass seed. Woodford is said to be the richest county in the State, so far as soil is concerned, and greater yields per acre are grown here than in any other county, or part of the State. The crops here this year are the best in the State any where.

Much attention is also given to the raising of fine stock, such as horses, cattle, sheep, mules and hogs. Many herds of cattle and hogs are fed for the market, and bring to the farmers each year thousands of dollars. The tobacco exported from this county each year is another very important item of commerce. Many fine stock farms are located here where fine horses, for saddle, harness and racers are raised. Many

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of the fine show horses of the county come from the stock farms of this county.

Poultry raising and dairying is also other important industries in this county, and many fine herds of dairy cattle are to be found here.

Woodford County has three or four railroads which make the shipping facilities very good. The turnpikes of the county are also very good, and an electrical railway line runs through the county connecting it with Lexington and Frankfort, which makes travel in this county very convenient and pleasant.

Versailles, the county seat, is located about the center of the county on the Louisville & Nashville R. R. and the Southern R. R. with the electric line passing through it also. It has about 3,500 inhabitants, fine schools, good churches, good banks, and is an up-to-date little city.

SHEEP SCABIES ERADICATION.

The importation of breeding sheep from other States during past years was the cause of introducing among Kentucky flocks the disease of scabies. This is a disease of the skin and is caused by a small mite which rapidly increases in numbers and soon spreads through a flock causing general unthriftiness, loss of wool, failure to breed in many cases and losses by death during winter months, all of which render the sheep industry an unprofitable occupation.

The disease when introduced into a county or community spreads from flock to flock by the trading of lambs or exposure in other manners of healthy sheep to those already diseased and by the exposure to premises which have recently contained diseased sheep, and when once introduced among a flock remains until proper treatment is applied.

After scabies had secured a foot hold in the State, it gradually spread until in 1909 it had extended into about 40 counties and was fast assuming an alarming and exceedingly serious condition. Sheep buyers in other States bitterly complained that many Kentucky sheep when shipped thereto were found infected with this disease and the inspectors of the United States Government located at various stock yards reported in 1909 that about 100 loads of Kentucky sheep were found infected with scabies upon arrival at market. At that time the diseases of sheep in common with all other diseases

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of live stock were provided for in laws, the enforcement of which was in the hands of the Kentucky State Board of Health. Diseases among sheep were not specially provided for and no active steps were taken by the State Board of Health to exterminate this disease. They did, however, request the United States Secretary of Agriculture to place a quarantine on our State, well knowing that the same would precipitate some action by our Legislature which would meet the following winter and without which no real organized work could be started.

In compliance with the request made by the Board of Health, the United States Secretary of Agriculture did on August 16, 1909, promulgate a quarantine order on the entire State of Kentucky which virtually prohibited any sheep leaving the State excepting for immediate slaughter and when so shipped to be hauled in placarded cars and placed in quarantine pens at market. The measures embodied in the Government quarantine regulation were exceedingly stringent and the sheep owners and others interested in the State sought relief by securing through legislative enactment the passage on March 22, 1910, of an act "To Prevent the Spread of Communicable Diseases Among Domestic Animals in the State of Kentucky and to Provide Greater Protection to the Live Stock Industry of the State." This law provided measures for fighting sheep scabies and created the State Live Stock Sanitary Board of Kentucky, into whose hands was placed the enforcement of the law.

The Live Stock Sanitary Board consists of five members, three of which are members of the State Board of Agriculture, Forestry and Immigration, the fourth member the head of the Division of Animal Husbandry of the Kentucky Agricultural Experiment Station and the fifth member the Commission of Agriculture, Forestry and Immigration. The law failed to provide any funds, but made it obligatory for counties to appoint inspectors, the expenses of whom were charged against the counties. The Live Stock Sanitary Board, realizing that a lack of funds would prevent an active campaign on their part, made application to and received from the United States Bureau of Animal Industry co-operation with their officials. This board reserved the right to formulate all regulations to be followed in the enforcement of the Kentucky law and named as State Live Stock Inspectors

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a number of Government inspectors who were secured as a result of the accepted co-operation.

An inspection of all flocks of sheep within the State was ordered on October 1, 1910, for the purpose of learning which flocks were infected and advising proper treatment for the same. This work of inspection and treatment of diseased flocks has progressed until the same has now extended into 110 counties within the State, more than 1,000 flocks have been found infected with this disease and proper treatment given under the supervision of the county and State inspectors in nearly all cases. The disease has been found to exist in more than sixty counties and in ten or twelve of which to such an alarming extent as to virtually destroy the sheep industry of such counties.

The Live Stock Sanitary Board has met monthly to consider and adopt measures for the instructions of its inspectors and the economical and prompt enforcement of the law. Its orders have been carried out in a satisfactory manner and the progress of sheep scabies eradication is now advanced to a point fully up to former expectations and sufficient has been learned by this board to warrant the statement that the State may be freed from this disease in the near future. The only obstacles now standing in the way of the conclusion of the work are the officials of a few counties which are somewhat slow in realizing the importance of this work and have thus far failed to provide adequate funds for carrying out the mandate of the law in their respective counties. However, most of these officials have promised that funds will be provided, and it is believed that in a few months at the outside the work of inspection will be completed throughout the State.

The following summary shows the amount of work accomplished on October 1, 1911:

Number of counties working	110
Number of counties in which disease was found.	61
Inspection—Free sheep	669,941
Exposed sheep	968
Infected sheep	42,627
Total inspections	713,536
Dippings	77,088

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The work of inspection and treatment of diseased flocks has been carried out systematically and nearly all flocks which were originally found diseased have been properly treated until cured.

The men appointed in the various counties as spectators have for the greater part been capable and efficient and have carried out the regulations promulgated by the Sanitary Board in a satisfactory manner.

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COUNTY STATISTICS.

COUNTIES.	Area of County in acres	Average price of land	Grand total Assessment for the county	Number of persons of voting age. White	Number of persons of voting age. Colored	Number graded schools. White	Number graded schools. Colored	Number common schools. White	Number common schools. Colored	Number pupil children, white	Number pupil children. Colored
Adair	231,249	$9.00	$2,898,557	3,332	300	1	....	79	8	4,947	516
Allen	.....	8.50	.....	3,228	200	1	....	66	4	4,369	98
Anderson	.....	13.50	.....	2,345	258	1	....	....	....	.....	.....
Ballard	.....	14.59	3,486,756	2,750	290	3	....	39	9	3,663	551
Barren	.....	20.00	.....	4,708	1,000	2	....	....	....	.....	.....
Bath	169,982	12.00	4,465,680	2,782	400	....	....	....	....	.....	.....
Bell	230,960	8.80	4,048,260	3,800	100	1	....	65	5	6,437	500
Boone	152,507	30.00	7,285,641	2,666	141	7	....	42	4	2,388	163
Bourbon	184,602	52.00	1,500,000	4,228	1,800	2	....	39	17	3,505	2,305
Boyd	.....	19.00	.....	.....	.....	....	....	....	....	4,700	500
Boyle	.....	90.00	.....	2,417	822	2	....	28	12	.....	.....
Bracken	.....	20.00	.....	2,347	65	4	....	....	....	.....	.....
Breathitt	420,000	10.00	2,780,527	3,500	100	1	....	95	2	5,433	100
Breckinridge	365,000	7.50	4,912,861	4,245	800	3	....	90	8	6,330	576
Bullitt	.....	10.00	.....	2,174	126	3	....	40	4	.....	.....
Butler	.....	8.00	2,701,923	3,438	75	....	....	....	....	5,318	225
Caldwell	191,759	8.90	2,970,006	1,967	575	4	1	46	9	3,635	883
Calloway	238,100	10.75	2,759,577	3,773	312	....	....	78	5	6,324	449
Campbell	.....	35.00	.....	12,003	1,125	25	....	43	4	.....	.....
Carlisle	103,858	15.25	2,125,163	1,824	125	7	....	37	3	2,810	151
Carroll	80,603	19.00	3,089,389	2,049	110	4	....	25	4	2,141	190
Carter	226,655	6.25	2,457,706	3,509	16	7	....	88	1	7,580	37
Casey	237,955	15.00	2,241,844	3,225	75	3	....	78	2	5,150	150
Christian	.....	17.00	.....	5,009	2,804	4	....	....	....	.....	.....
Clark	156,557	100.00	11,098,245	3,910	606	2	1	24	18	30,000	415
Clay	296,422	10.00	2,388,862	1,841	90	1	....	....	....	.....	.....

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Clinton	.....	15.00	.....	1,607	.....	.....	....	....	....	2,789	42
Crittenden	213,989	7.90	3,117,602	2,949	134	.....	....	....	....	.....	.....
Cumberland	.....	20.00	.....	1,842	300	2	....	....	....	.....	.....
Daviess	.....	40.00	.....	4,172	2,836	2	1	....	....	.....	.....
Edmonson	195,120	10.50	1,948,429	2,000	118	.....	....	50	3	3,567	187
Elliott	.....	4.20	1,058,709	1,757	.....	1	....	56	....	3,878	.....
Estill	133,056	65.00	1,436,618	2,260	250	1	....	64	1	4,437	29
Fayette	.....	85.00	.....	12,500	3,200	6	3	32	15	.....	.....
Fleming	216,262	60.00	6,193,209	2,900	731	3	....	59	4	4,600	381
Floyd	350,902	6.55	3,699,907	3,394	20	1	....	99	1	6,985	30
Franklin	130,247	85.00	8,192,888	2,395	184	1	1	50	3	4,784	815
Fulton	.....	65.00	.....	2,800	900	4	....	26	9	3,118	1,116
Gallatin	60,174	14.00	1,308,983	1,137	125	3	....	19	2	1,188	90
Garrard	136,410	65.00	6,474,052	2,394	568	1	1	30	12	1,986	376
Grant	158,998	15.20	3,525,545	2,805	117	3	....	44	3	3,251	135
Graves	335,046	10.50	1,115,276	7,048	656	5	....	101	11	8,586	630
Grayson	281,716	7.00	1,431,437	4,200	282	3	....	95	2	6,609	109
Green	.....	20.00	.....	2,233	247	.....	....	....	....	.....	.....
Greenup	.....	10.00	.....	1,993	34	5	....	....	....	.....	.....
Hancock	120,055	11.00	2,071,187	2,005	140	.....	....	....	....	2,080	160
Hardin	361,803	9.20	6,207,404	4,407	502	.....	....	....	....	.....	.....
Harlan	281,273	15.00	3,940,109	1,888	40	.....	....	53	2	3,628	201
Harrison	191,000	25.62	6,538,190	4,345	225	1	1	56	6	4,068	782
Hart	.....	14.25	.....	3,650	473	4	....	....	....	.....	.....
Henderson	.....	21.00	.....	4,500	2,000	10	2	....	....	.....	.....
Henry	172,187	20.00	4,118,466	3,361	300	.....	....	36	8	3,467	624
Hickman	144,479	10.50	4,191,693	2,380	398	2	....	31	6	3,046	596
Hopkins	.....	.....	.....	5,815	1,800	.....	....	....	....	.....	.....
Jackson	194,456	6.14	1,591,648	2,150	6	.....	....	68	....	3,100	.....
Jefferson	.....	100.00	.....	48,000	15,000	49	13	71	20	32,002	6,489
Jessamine	.....	46.00	.....	1,501	500	.....	....	26	9	.....	.....
Johnson	.....	9.00	.....	3,015	4	3	....	....	....	.....	.....
Kenton	.....	.....	.....	13,500	1,400	8	....	23	9	2,449	1,423
Knott	202,217	5.56	2,211,694	1,830	20	3	....	58	1	4,379	69
Knox	232,884	2.50	3,834,494	4,173	200	3	1	84	5	7,650	449
Larue	156,832	13.00	1,908,551	2,193	121	.....	....	....	....	.....	.....
Laurel	254,554	.....	3,024,158	3,240	350	3	....	92	4	.....	.....
Lawrence	.....	10.00	.....	3,840	30	1	....	....	....	.....	.....

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COUNTY STATISTICS—Continued.

COUNTIES.	Area of County in acres	Average price of land	Grand total Assessment for the county	Number of persons of voting age. White	Number of persons of voting age. Colored	Number graded schools. White	Number graded schools. Colored	Number common schools. White	Number common schools. Colored	Number pupil children, white	Number pupil children. Colored
Lee	129,465	$4.50	1,169,228	1,964	54	3	....	45	2	2,136	125
Leslie	277,663	10.00	2,129,134	1,561	30	2	....	50	1	3,400	78
Letcher	251,866	10.00	2,339,421	1,918	6	2	....	64	....	4,051	.....
Lewis	312,488	5.75	2,760,548	3,903	28	.....	....	....	....	.....	.....
Lincoln	.....	35.00	.....	3,231	985	.....	....	....	....	.....	.....
Livingston	.....	15.00	2,939,768	2,587	.....	.....	....	....	....	3,150	250
Logan	.....	11.00	.....	4,838	1,374	.....	....	....	....	.....	.....
Lyon	.....	7.25	.....	1,960	450	.....	....	33	9	2,579	544
Madison	257,511	.....	12,708,896	5,000	1,282	.....	....	72	25	5,726	1,472
Magoffin	.....	.....	.....	.....	.....	.....	....	....	....	.....	.....
Marion	.....	22.00	.....	3,021	498	.....	....	....	....	.....	.....
Marshall	200,118	9.40	1,853,555	3,486	19	4	....	65	1	5,132	38
Martin	.....	7.00	.....	1,123	1	.....	....	....	....	.....	.....
Mason	149,521	42.50	10,682,263	4,225	675	2	....	50	9	3,069	554
McCracken	.....	.....	2,790,220	4,000	.....	.....	....	....	....	.....	.....
McLean	141,520	10.75	2,038,923	2,725	275	.....	....	....	....	3,976	238
Meade	.....	11.00	.....	2,135	161	.....	....	....	....	.....	.....
Menifee	114,574	4.45	604,415	1,176	27	.....	....	....	....	.....	.....
Mercer	155,865	75.00	7,502,453	2,940	431	1	....	54	9	2,600	309
Metcalfe	.....	20.00	.....	2,089	350	.....	....	....	....	.....	.....
Monroe	.....	15.00	.....	2,647	200	.....	....	....	....	4,456	300
Montgomery	120,527	31.50	6,913,900	2,199	795	1	1	20	11	1,903	478
Morgan	207,174	9.22	2,708,777	3,112	4	4	....	70	....	6,005	.....
Muhlenberg	.....	.....	.....	4,823	1,440	.....	....	....	....	.....	.....
Nelson	.....	30.00	.....	2,398	750	.....	....	....	....	.....	.....
Nicholas	122,369	27.50	4,933,152	2,666	268	1	....	40	2	2,299	145

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Ohio	350,983	9.00	2,691,143	6,370	325	6	....	120	6	.....	.....
Oldham	213,313	25.00	2,732,953	3,100	400	4	1	61	6	4,118	385
Owen	113,718	22.50	4,202,928	1,530	250	2	....	19	5	1,690	286
Owsley	250,000	.....	900,000	1,600	24	1	....	39	1	2,000	30
Pendleton	.....	25.00	.....	2,701	150	.....	....	....	....	.....	.....
Perry	251,191	9.00	203,077	1,215	150	1	....	60	1	4,334	36
Pike	.....	9.00	.....	5,710	70	.....	....	....	....	.....	.....
Powell	83,658	20.00	876,052	1,240	204	2	....	34	2	2,333	176
Pulaski	.....	8.00	5,889,089	6,810	300	10	....	140	4	13,500	340
Robertson	62,110	14.00	1,120,000	1,056	15	1	....	20	1	1,003	15
Rockcastle	.....	7.00	.....	2,746	13	.....	....	....	....	.....	.....
Rowan	202,556	3.31	1,334,367	1,916	6	1	....	49	1	3,389	10
Russell	.....	12.00	.....	2,307	60	.....	....	....	....	3,707	72
Scott	183,553	45.00	10,023,132	2,462	1,000	3	....	43	15	4,400	1,300
Shelby	.....	35.00	2,449,900	2,678	327	1	....	47	14	3,647	1,186
Simpson	.....	12.00	.....	2,509	558	.....	....	....	....	.....	.....
Spencer	111,973	15.25	1,705,553	1,616	154	.....	....	....	....	.....	.....
Taylor	.....	10.00	.....	2,466	334	.....	....	....	....	3,502	471
Todd	.....	.....	.....	2,148	1,476	.....	....	....	....	.....	.....
Trigg	.....	6.50	.....	2,595	500	.....	....	....	....	.....	.....
Trimble	85,773	15.00	1,953,453	1,655	40	1	1	25	1	1,784	28
Union	211,860	25.00	8,560,392	3,488	499	4	....	59	12	5,574	892
Warren	309,793	16.00	.....	6,893	1,334	1	....	81	18	5,452	1,334
Washington	.....	40.00	.....	3,200	353	2	1	....	....	.....	.....
Wayne	.....	10.00	.....	3,375	147	.....	....	....	....	.....	.....
Webster	.....	11.00	.....	4,348	350	.....	....	....	....	.....	.....
Whitley	349,456	8.00	5,408,276	5,556	350	3	....	92	4	7,236	9
Wolfe	275,000	4.00	785,000	11,600	300	1	....	38	1	2,875	28
Woodford	119,311	100.00	10,769,809	1,974	792	3	1	25	15	1,686	436

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COUNTY STATISTICS—Continued.

COUNTIES.	HEMP		MEADOW		Bushels of Grass Seed	Acres of Woodland	COW PEAS	
	Acreage	Yield per acre in pounds	Acreage	Yield per acre in tons			Acreage	Yield per acre in tons
Adair	.....	.....	7,865	1.50	.....	59,547	.....	.....
Allen	.....	.....	4,809	2.00	.....	46,000	.....	.....
Anderson	.....	.....	4,925	2.00	.....	5,500	.....	.....
Ballard	.....	.....	2,986	1.50	.....	13,836	.....	.....
Barren	.....	.....	10,000	2.00	.....	.....	.....	.....
Bath	.....	.....	800	2.00	.....	499	.....	.....
Bell	.....	.....	800	1.50	.....	14,500	.....	.....
Boone	.....	.....	8,316	2.00	.....	3,500	.....	.....
Bourbon	.....	.....	.....	.....	.....	.....	.....	.....
Boyd	.....	.....	27,000	1.00	.....	10,500	.....	.....
Boyle	.....	.....	5,871	1.50	.....	5,540	.....	.....
Bracken	.....	.....	3,750	1.50	.....	1,450	.....	.....
Breathitt	.....	.....	8,000	5.00	.....	320,000	.....	.....
Breckinridge	.....	.....	8,469	1.00	.....	11,635	.....	.....
Bullitt	.....	.....	7,100	2.00	.....	43,103	.....	.....
Butler	.....	.....	4,671	2.00	.....	61,192	.....	.....
Caldwell	.....	.....	3,491	1.50	.....	32,360	.....	.....
Calloway	.....	.....	3,161	1.00	.....	41,291	.....	.....
Campbell	.....	.....	3,000	2.00	.....	72	.....	.....
Carlisle	.....	.....	.....	.....	.....	.....	.....	.....
Carroll	.....	.....	2,164	1.50	.....	1,873	.....	.....
Carter	.....	.....	2,218	1.50	.....	38,570	.....	.....
Casey	.....	.....	5,330	1.25	.....	102,719	.....	.....
Christian	.....	.....	21,668	1.00	.....	8,100	.....	.....

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Clark	.....	.....	.....	.....	.....	.....	.....	.....
Clay	.....	.....	2,000	1.50	.....	240,000	.....	.....
Clinton	.....	.....	3,986	1.50	.....	35,420	.....	.....
Crittenden	.....	.....	4,537	2.00	.....	29,261	.....	.....
Cumberland	.....	.....	3,022	2.00	.....	25,000	.....	.....
Daviess	.....	.....	10,750	1.00	.....	6,500	.....	.....
Edmonson	.....	.....	1,405	1.00	.....	225	.....	.....
Elliott	.....	.....	58,243	1.50	.....	25,000	.....	.....
Estill	.....	.....	46,780	1.50	.....	46,778	.....	.....
Fayette	300	1,000	15,000	2.00	.....	2,103	.....	.....
Fleming	.....	.....	.....	.....	.....	.....	.....	.....
Floyd	132	.....	1,254	1.00	15	88,583	.....	.....
Franklin	.....	.....	.....	.....	.....	.....	.....	.....
Fulton	.....	.....	1,825	1.50	.....	1,029	.....	.....
Gallatin	.....	.....	952	1.50	.....	239	.....	.....
Garrard	100	1,000	4,000	4.00	.....	3,000	.....	.....
Grant	.....	.....	2,939	1.50	.....	1,640	.....	.....
Graves	.....	.....	7,102	1.25	.....	8,522	.....	.....
Grayson	.....	.....	3,784	1.25	.....	62,367	650	2.50
Green	.....	.....	1,300	1.50	.....	41,475	275	2.00
Greenup	125	800	1,112	1.00	.....	35,000	100	1.50
Hancock	.....	.....	1,600	1.00	.....	10,000	500	1.50
Hardin	.....	.....	17,000	2.00	.....	20,000	300	3.00
Harlan	.....	.....	1,500	1.50	.....	255,000	.....	.....
Hart	14	1,000	2,000	2.00	.....	51,275	.....	.....
Harrison	.....	.....	.....	.....	.....	.....	.....	.....
Henderson	.....	.....	11,796	2.50	.....	7,592	.....	.....
Henry	.....	.....	1,600	2.50	.....	575	925	2.50
Hickman	.....	.....	1,000	2.00	.....	12,850	350	2.00
Hopkins	.....	.....	2,100	2.00	.....	41,375	600	3.00
Jackson	.....	.....	3,736	1.50	.....	78,489	.....	.....
Jefferson	.....	.....	.....	.....	.....	.....	.....	.....
Jessamine	25½	1,000	1,219	2.00	.....	42,325	.....	.....
Johnson	.....	.....	2,131	1.50	.....	1,250	532	2.50
Kenton	.....	.....	10,075	3.00	.....	10,300	350	2.50
Knott	.....	.....	554	1.00	.....	61,772	.....	.....
Knox	.....	.....	5,746	2.00	.....	45,976	500	2.50
Larue	.....	.....	1,509	1.50	.....	23,000	225	2.00

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COUNTY STATISTICS—Continued.

COUNTIES.	HEMP		MEADOW		Bushels of Grass Seed	Acres of Woodland.	COW PEAS	
	Acreage	Yield per acre in pounds	Acreage	Yield per acre in tons			Acreage	Yield per acre in tons
Laurel	.....	.....	1,575	1.00	.....	75,084	800	3.00
Lawrence	75	1,100	3,369	1.00	.....	53,800	250	2.50
Lee	.....	.....	1,663	1.50	.....	25,023	.....	.....
Leslie	.....	.....	3,000	1.00	.....	220,000	.....	.....
Letcher	.....	.....	900	1.50	.....	245,000	.....	.....
Lewis	.....	.....	750	1.00	.....	10,750	.....	.....
Lincoln	975	1,300	2,603	1.50	.....	9,792	1,200	4.00
Livingston	350	1,000	3,790	1.00	.....	35,000	.....	.....
Logan	.....	.....	470	2.00	.....	42,325	3,710	3.50
Lyon	.....	.....	2,650	1.50	.....	15,500	.....	.....
Madison	625	1,000	2,720	2.00	.....	1,379	350	3.00
Magoffin	.....	.....	.....	.....	.....	.....	.....	.....
Marion	.....	.....	2,160	1.50	.....	2,500	250	2.00
Marshall	.....	.....	2,500	1.50	.....	31,375	.....	.....
Martin	.....	.....	473	1.00	.....	50,560	141	2.50
Mason	.....	.....	3,946	1.25	.....	2,000	.....	.....
McCracken	.....	.....	2,589	2.00	.....	23,109	.....	.....
McLean	.....	.....	2,190	2.00	.....	21,900	.....	.....
Meade	.....	.....	5,550	1.00	.....	19,750	300	3.50
Menefee	.....	.....	832	1.00	.....	17,960	125	2.50
Mercer	.....	.....	4,075	2.00	.....	43,250	450	2.00
Metcalfe	.....	.....	5,138	1.50	.....	65,850	375	2.00
Monroe	70	1,100	2,999	2.00	100	1,824	525	3.00
Montgomery	.....	.....	3,233	1.00	.....	57,281	125	1.50

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Morgan	.....	.....	9,265	1.00	.....	33,227	300	2.00
Muhlenberg	824	1,000	6,159	1.50	71	3,340	250	3.00
Nelson	305	800	4,240	1.50	.....	2,987	275	2.00
Nicholas	150	900	4,625	1.00	.....	1,512	178	3.00
Ohio	40	1,000	5,040	2.00	.....	60,325	1,000	3.00
Oldham	.....	.....	.....	.....	.....	.....	.....	.....
Owen	.....	.....	.....	.....	.....	.....	.....	.....
Owsley	.....	.....	2,000	1.00	.....	150,000	500	2.00
Pendleton	.....	.....	920	1.50	.....	65,475	350	3.00
Perry	.....	.....	2,380	1.00	.....	68,276	125	2.50
Pike	.....	.....	1,325	1.00	.....	152,575	254	1.50
Powell	.....	.....	975	1.00	.....	25,350	150	1.00
Pulaski	.....	.....	11,467	2.00	.....	98,979	575	2.50
Robertson	.....	.....	2,007	1.50	.....	1,712	325	2.00
Rockcastle	.....	.....	1,500	1.50	.....	72,525	200	2.00
Rowan	.....	.....	2,088	1.00	.....	50,525	325	2.50
Russell	1	500	2,748	1.25	.....	40,975	65	2.00
Scott	660	1,000	4,292	2.50	783	1,425	575	3.00
Shelby	275	1,100	5,200	2.25	1,000	6,525	2,325	3.50
Simpson	.....	.....	12,400	1.00	.....	8,527	275	2.50
Spencer	.....	.....	2,160	2.00	.....	45,400	548	2.00
Taylor	.....	.....	1,850	1.00	.....	35,250	300	2.50
Todd	50	1,000	2,520	1.50	.....	27,350	550	3.00
Trigg	80	800	10,000	1.00	.....	60,575	2,100	1.50
Trimble	.....	.....	4,347	1.50	.....	17,230	350	1.00
Union	.....	.....	3,596	2.00	.....	13,250	300	2.00
Warren	.....	.....	16,598	2.00	.....	25,750	225	1.50
Washington	.....	.....	6,537	1.50	.....	3,560	175	2.00
Wayne	.....	.....	6,346	2.00	.....	119,875	600	3.00
Webster	.....	.....	3,500	1.00	.....	7,500	1,000	1.00
Whitley	.....	.....	3,100	1.50	.....	150,800	100	2.00
Wolfe	.....	.....	2,300	1.00	.....	210,000	2,000	2.00
Woodford	5	370	9,624	2.00	1,137	1,722	578	2.50

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COUNTY STATISTICS—Continued.

COUNTIES.	TOBACCO		CORN		WHEAT		OATS		BARLEY	
	Acreage	Average yield per acre	Acreage grown	Average yield per acre	Acreage grown	Average yield per acre	Acreage grown	Average yield per acre	Acreage grown	Average yield per acre
Adair	3,253	600	23,184	25	7,582	10	.....	30	.....	.....
Allen	3,138	900	26,223	25	4,098	8½	1,277	30	.....	.....
Anderson	2,500	550	5,700	35	1,850	10	1,500	25	.....	.....
Ballard	4,715	980	13,986	25	8,276	12½	200	40	.....	.....
Barren	4,500	1,100	.....	27	.....	13	.....	30	.....	.....
Bath	1,950	800	1,809	25	1,400	12	.....	.....	.....	.....
Bell	.....	.....	3,409	28	.....	.....	1,000	15	.....	.....
Boone	2,600	600	14,000	25	2,700	10	800	20	.....	.....
Bourbon	5,000	1,200	30,000	45	50,000	10	1,000	20	200	30
Boyd	250	1,000	7,500	20	1,800	8	3,000	20	.....	.....
Boyle	1,499	1,000	9,705	48	8,447	20	440	40	1	30
Breckinridge	7,571	780	46,683	17	10,636	9½	1,404	30	.....	.....
Breathitt	20	800	100,000	20	.....	.....	10,000	18	.....	.....
Bracken	5,500	800	1,533	20	237	12	.....	.....	.....	.....
Bullitt	1,200	800	17,500	30	2,900	12	450	25	.....	.....
Butler r.	1,616	800	42,911	25	3,307	12	457	30	.....	.....
Caldwell	4,055	700	22,229	15	4,112	9½	.....	60	.....	.....
Calloway	6,400	800	13,239	20	3,461	12	.....	.....	.....	.....
Campbell	600	550	3,250	25	1,500	12	1,000	30	.....	.....
Carlisle	1,200	700	10,011	30	9,339	12	800	30	.....	.....
Carroll	1,938	850	4,354	22	668	14	1,460	23	.....	.....
Carter	2,903	600	7,182	20	724	8	326	20	.....	.....
Casey	2,436	800	24,850	25	2,748	10	800	27	.....	.....
Christian	16,607	800	41,007	25	43,336	15	15,155	25	.....	.....

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Clark	2,941	600	12,565	38	14,561	20	88	25	16½	30
Clay	500	800	30,402	15	.....	.....	5,000	12	.....	.....
Clinton	.....	.....	17,446	20	4,728	10	200	20	.....	.....
Crittenden	4,506	750	36,392	23	2,871	11	500	25	.....	.....
Cumberland	740	700	17,356	30	1,611	15	250	25	.....	.....
Daviess	7,060	560	1,985	20	2,075	9	1,600	20	.....	.....
Elmonson	1,230	720	23,628	16	1,197	10½	615	18	.....	.....
Elliott	976	600	17,723	15	509	14	.....	.....	.....	.....
Estill	741	650	16,442	19	113	14	145	19	.....	.....
Fayette	2,300	1,500	10,000	50	13,000	15	3,000	30	.....	.....
Fleming	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Floyd	12	650	18,555	18	.....	.....	158	7	.....	.....
Franklin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fulton	570	800	11,044	25	8,795	12	.....	.....	.....	.....
Gallatin	965	800	2,147	21	359	16	298	25	.....	.....
Garrard	4,100	650	700	30	185	25	300	40	.....	.....
Grant	2,405	750	4,954	35	1,323	12	466	30	.....	.....
Graves	901	800	43,409	25	8,412	12	.....	.....	.....	.....
Grayson	2,395	630	42,387	35	8,449	8	3,105	18	.....	.....
Green	3,998	800	21,050	30	5,281	10	2,450	15	.....	.....
Greenup	444	1,400	4,277	19	354	9	107	8	.....	.....
Hancock	3,005	695	12,626	21	4,224	16	400	24	.....	.....
Hardin	891	790	15,566	25	7,291	13	965	22	1	29
Harlan	.....	.....	12,839	10	.....	.....	3,000	10	.....	.....
Harrison	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hart	2,003	1,000	22,440	18.8	2,653	12	298	29	.....	.....
Henderson	9,349	843	38,283	25	9,796	12	247	25	.....	.....
Henry	6,000	700	25,000	20	5,000	12	2,000	10	.....	.....
Hickman	2,434	750	16,565	24	12,301	14	1,200	25	.....	.....
Hopkins	9,781	800	3,012	17	6,365	12	247	25	.....	.....
Jackson	126	497	18,025	15	420	7	1,766	12	.....	.....
Jefferson	.....	.....	.....	35	.....	20	.....	27	.....	.....
Jessamine	1,978	75	25,631	48	7,982	16	166	35	6¾	30
Johnson	14	600	23,100	16	8	8	627	8	.....	.....
Kenton	881	600	2,768	35	534	16	.....	.....	.....	.....
Knott	200	500	17,224	19	18	7½	.....	.....	.....	.....
Knox	389	300	17,654	20	75	10	4,367	10	.....	.....
Laurel	100	1,000	22,500	20	1,500	12	2,000	20	.....	.....
Larue	1,500	800	20,028	30	9,772	11	34,635	34	.....	.....

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COUNTY STATISTICS—Continued.

COUNTIES.	TOBACCO		CORN		WHEAT		OATS		BARLEY	
	Acreage	Average yield per acre	Acreage grown	Average yield per acre	Acreage grown	Average yield per acre	Acreage grown	Average yield per acre	Acreage grown	Average yield per acre
Lawrence	780	576	31,456	16	1,410	10	600	10	.....	.....
Lee	85	870	11,655	17	174	20	.....	.....	.....	.....
Leslie	250	600	15,570	12	.....	.....	10,000	10	.....	.....
Letcher	.....	.....	16,132	15	.....	.....	1,000	20	.....	.....
Lewis	879	800	3,974	20	697	13	.....	.....	.....	.....
Lincoln	2,200	800	19,700	35	7,800	9	1,890	20	420	20
Livingston	1,092	800	19,072	20	2,106	10	.....	.....	.....	.....
Logan	10,196	798	56,477	22	22,958	12	409	30	.....	.....
Lyon	3,900	800	15,353	25	1,587	14	.....	.....	.....	.....
Madison	4,021	900	19,160	35	4,362	14	4,910	30	.....	.....
Magoffin	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marion	3,900	850	26,500	35	2,350	9	2,700	25	75	30
Marshall	6,550	800	24,393	20	4,403	10	309	30	.....	.....
Martin	243	600	15,479	15	16	8	253	12	.....	.....
Mason	8,720	900	10,211	40	6,943	25	1,050	50	.....	.....
McCracken	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
McLean	3,750	975	14,510	21	4,174	9	793	35	.....	.....
Meade	575	740	5,722	22	3,168	10	400	16	.....	.....
Menefee	572	400	6,155	14	281	5	6,341	20	.....	.....
Mercer	2,503	867	14,154	32	12,855	19	307	35	116	22
Metcalfe	3,883	750	19,028	25	3,404	10	3,000	30	.....	.....
Monroe	1,622	700	23,513	22	5,714	10	240	20	.....	.....
Montgomery	3,370	951	8,957	39	1,296	13	1,995	30	3½	20
Morgan	595	550	27,048	16	790	3½	.....	.....	.....	.....

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Muhlenberg	11,246	786	19,462	24	3,845	14	780	22	.....	.....	
Nelson	1,486	1,000	17,914	30	7,242	13	1,122	30	.....	.....	
Nicholas	3,747	875	9,326	32	2,647	13	675	30	.....	.....	
Ohio	6,061	800	38,157	19	7,007	14	728	30	.....	.....	
Oldham	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Owen	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Owsley	100	700	10,000	20	.....	.....	300	10	.....	.....	
Pendleton	4,000	700	13,870	25	2,930	10	3,220	40	.....	.....	
Perry	200	400	14,001	19	.....	.....	1,400	20	.....	.....	
Pike	123	600	31,948	19	45	7	223	7	.....	.....	
Powell	1,094	1,000	5,895	25	.....	.....	242	20	.....	.....	
Pulaski	2,283	700	47,027	33	11,535	12½	.....	40	.....	.....	
Robertson	1,754	695	4,759	25	1,779	11½	.....	.....	.....	.....	
Rockcastle	294	1,000	21,500	15	2,580	10	242	19	.....	.....	
Rowan	464	500	11,750	14	378	6	.....	.....	.....	.....	
Russell	265	393	25,936	20	5,182	7	2,000	30	.....	.....	
Scott	3,623	600	9,908	30	6,384	10	4,700	12	.....	.....	
Shelby	7,612	950	17,745	30	9,830	12	1,200	20	85	20	
Simpson	3,275	789	19,525	23	13,683	12	1,250	28	.....	.....	
Spencer	3,225	850	9,633	29	2,901	9	415	30	.....	.....	
Taylor	2,175	750	22,500	20	3,250	9½	1,150	18	.....	.....	
Todd	1,950	850	5,095	35	2,830	12	1,260	16	.....	.....	
Trigg	9,027	800	28,986	25	8,400	15	400	25	.....	.....	
Trimble	4,131	900	9,003	28	2,382	15	1,034	27	.....	.....	
Union	3,888	900	29,020	25	10,000	14	3,000	30	.....	.....	
Warren	2,798	925	23,678	25	6,929	14	1,000	25	.....	.....	
Washington	4,300	800	10,720	40	3,965	11	1,950	25	.....	.....	
Wayne	400	800	55,461	26	10,000	19	3,500	21	.....	.....	
Webster	3,804	800	21,609	25	3,566	10	267	20	.....	.....	
Whitley	410	1,000	18,370	25	1,500	12	2,500	20	.....	.....	
Wolfe	.....	.....	61,740	20	.....	.....	5,160	18	.....	.....	
Woodford	3,653	925	8,520	27	10,511	13½	200	12	701	20	

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COUNTY STATISTICS—Continued.

COUNTIES.	HORSES.		MULES.		JACKS.		JENNETS.	
	Number	Value	Number	Value	Number	Value	Number	Value
Adair	4,073	$139,469	2,257	$178,790	31	$4,260	12	$550
Anderson	3,500	125,800	475	59,375	12	1,800	8	400
Allen	2,971	184,810	3,129	232,870	49	3,886	48	575
Ballard	4,088	236,900	2,821	178,665	2	300	3	150
Barren	3,850	202,380	3,050	196,557	7	1,400	5	250
Bath	768	34,060	1,607	100,665	8	1,200	6	300
Bell	213	11,280	573	50,515	3	500	5	200
Boone	3,957	264,679	624	52,325	12	2,050	11	365
Bourbon	3,567	174,840	1,439	104,360	25	4,700	42	1,455
Boyd	4,000	176,400	400	7,500	.....	.....	.....	.....
Boyle	2,390	149,000	1,297	110,480	34	5,940	132	7,360
Bracken	3,577	258,475	109	9,800	25	4,500	37	1,850
Breathitt	3,000	225,000	3,500	437,500	10	2,000	.....	.....
Breckinridge	5,351	354,459	2,983	253,368	33	3,756	42	900
Bullitt	2,967	173,191	1,116	85,640	17	2,705	7	310
Butler	3,091	232,437	2,914	236,076	35	3,085	22	427
Caldwell	2,775	145,940	2,336	127,715	20	1,775	8	125
Calloway	5,213	385,921	3,155	255,110	51	6,480	45	955
Campbell	1,625	121,875	285	42,750	.....	.....	.....	.....
Carlisle	3,491	211,867	1,643	110,220	.....	.....	.....	.....
Carroll	2,539	119,860	489	28,730	10	1,925	14	395
Carter	2,856	192,766	1,156	89,805	15	1,775	11	415
Casey	3,543	250,725	1,170	225,300	.....	.....	.....	.....
Christian	3,397	240,825	4,077	450,725	25	2,575	35	1,650

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Clark	2,815	171,735	1,543	125,780	44	8,800	50	1,635
Clay	475	105,976	2,000	186,494	13	1,220	3	65
Clinton	1,213	108,750	997	125,550	29	2,950	20	400
Crittenden	3,325	232,190	2,010	158,185	36	4,550	21	1,010
Cumberland	1,531	84,200	1,117	77,140	24	1,265	14	150
Daviess	6,388	325,400	2,975	160,250	.....	.....	.....	.....
Edmonson	2,090	157,388	1,158	106,124	14	1,660	24	550
Elliott	1,875	130,162	789	74,447	12	1,550	18	390
Estill	2,019	113,382	852	66,005	16	1,655	7	185
Fayette	5,045	504,500	1,705	170,500	.....	.....	.....	.....
Fleming	6,598	382,591	915	63,130	65	8,355	107	3,820
Floyd	1,885	134,727	1,095	100,608	15	1,205	7	212
Franklin	.....	.....	.....	.....	.....	.....	.....	.....
Fulton	1,310	176,315	2,495	201,791	18	2,755	16	230
Gallatin	622	28,735	238	14,450	3	450	1	20
Garrard	3,275	214,090	1,596	139,434	44	7,275	56	2,145
Grant	2,835	175,825	455	45,325	21	4,325	22	815
Graves	7,218	583,010	5,116	384,655	62	7,570	27	490
Grayson	5,498	289,515	2,546	160,230	28	2,395	17	460
Green	2,585	168,525	2,300	230,000	.....	.....	.....	.....
Greenup	1,884	134,625	991	63,000	12	1,150	13	260
Hancock	1,970	140,350	606	58,450	13	1,170	10	300
Hardin	2,025	28,423	2,187	153,298	46	6,045	30	1,110
Harlan	455	38,105	722	83,287	23	2,505	2	100
Harrison	.....	.....	.....	.....	.....	.....	.....	.....
Hart	4,049	242,940	2,274	204,660	30	2,250	23	690
Henderson	3,771	226,260	4,896	440,640	.....	.....	.....	.....
Henry	.....	.....	.....	.....	.....	.....	.....	.....
Hickman	3,627	244,775	2,277	227,975	11	1,100	6	180
Hopkins	3,783	351,470	2,853	288,750	.....	.....	.....	.....
Jackson	1,548	116,468	1,191	122,425	6	390	3	90
Jefferson	7,887	788,700	2,347	235,825	.....	.....	.....	.....
Jessamine	20,026	111,845	967	70,460	20	2,700	16	370
Johnson	2,000	160,000	1,178	117,825	.....	.....	.....	.....
Kenton	3,000	210,000	177	17,700	.....	.....	.....	.....
Knott	734	36,658	788	84,640	3	240	7	135
Knox	1,198	119,055	1,974	176,255	17	1,821	14	525
Larue	3,548	217,545	1,193	94,910	21	3,614	12	880
Laurel	2,479	170,715	1,485	128,365	23	2,350	9	260

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COUNTY STATISTICS—Continued.

COUNTIES.	HORSES.		MULES.		JACKS.		JENNETS.	
	Number	Value	Number	Value	Number	Value	Number	Value
Lawrence	2,839	$280,750	903	$90,300	.....	.....	.....	.....
Lee	917	63,190	620	45,930	5	$300	8	$140
Leslie	461	35,650	691	68,470	4	460	1	30
Letcher	901	65,802	1,044	10,462	.....	.....	.....	.....
Lewis	3,609	216,140	515	39,280	9	725	.....	.....
Lincoln	3,736	22,350	2,040	255,000	.....	.....	.....	.....
Livingston	3,072	229,412	2,143	177,640	24	3,270	11	.....
Logan	3,803	380,300	4,081	510,125	44	4,400	25	750
Lyon	1,685	99,470	1,572	103,160	24	1,675	1	25
Madison	5,383	300,250	2,298	185,010	88	9,265	123	3,675
Magoffin	.....	.....	.....	.....	.....	.....	.....	.....
Marion	3,475	278,000	2,197	219,700	.....	.....	.....	.....
Marshall	3,994	253,910	2,384	170,690	25	2,840	11	125
Martin	800	72,000	649	81,125	.....	.....	.....	.....
Mason	3,289	155,435	241	24,299	27	2,854	23	754
McCracken	.....	.....	.....	.....	.....	.....	.....	.....
McLean	2,628	161,655	1,095	75,580	13	1,575	11	195
Meade	3,274	294,660	1,020	127,500	.....	.....	.....	.....
Menefee	1,081	68,750	398	25,555	2	150	.....	.....
Mercer	4,378	241,655	1,139	80,668	38	5,415	15	545
Metcalfe	2,554	135,898	1,949	131,880	23	1,630	16	285
Monroe	2,315	173,625	1,132	113,200	25	1,250	22	660
Montgomery	2,411	114,360	927	53,715	41	4,665	48	1,715
Morgan	2,604	175,251	1,467	130,073	26	2,600	6	160

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Muhlenberg	2,228	167,100	2,138	250,800	.....	.....	.....	.....
Nelson	3,635	272,625	1,785	178,500	.....	.....	.....	.....
Nicholas	3,453	167,390	467	24,290	37	4,775	.....	.....
Ohio	7,250	48,140	4,848	222,600	35	5,038	5	240
Oldham	.....	.....	.....	.....	.....	.....	.....	.....
Owen	.....	.....	.....	.....	.....	.....	.....	.....
Owsley	.....	.....	.....	.....	.....	.....	.....	.....
Pendleton	1,500	105,000	2,000	200,000	14	1,400	.....	.....
Perry	4,660	326,200	246	24,600	.....	.....	.....	.....
Pike	665	4,567	712	6,915	2	125	.....	.....
Powell	1,626	113,820	1,533	153,300	.....	.....	.....	.....
Pulaski	870	48,920	345	26,990	4	500	.....	.....
Robertson	4,074	321,691	3,243	269,042	67	8,260	34	1,605
Rockcastle	2,052	111,940	72	3,850	8	1,150	3	50
Rowan	2,350	164,500	1,015	101,250	.....	.....	.....	.....
Russell	1,010	67,231	602	54,530	12	990	5	130
Scott	2,211	445,789	1,182	113,119	33	3,180	25	1,100
Shelby	3,791	201,230	1,077	70,005	65	6,065	35	1,225
Simpson	4,975	271,296	2,291	186,580	44	6,500	32	1,720
Spencer	3,177	222.390	2,345	234,500	35	3,500	12	360
Taylor	3,013	92,130	695	30,065	22	1,925	14	480
Todd	2,375	166,250	1,390	139,000	.....	.....	.....	.....
Trigg	2,598	181,860	3,684	368,400	.....	.....	.....	.....
Trimble	2,877	200,390	3,499	349,900	.....	.....	.....	.....
Union	3,162	185,462	474	36,635	16	2,750	4	80
Warren	4,035	217,565	3,380	221,630	25	2,040	11	115
Washington	5,090	357,608	3,992	343,775	58	7,320	72	2,680
Wayne	1,599	111,930	588	58,800	.....	.....	.....	.....
Webster	2,905	20,350	2,111	211,100	.....	.....	.....	.....
Whitley	3,350	234,500	2,330	233,000	.....	.....	.....	.....
Wolfe	1,969	139,045	2,490	1,230,582	18	1,175	21	449
Woodford	1,620	85,000	800	76,000	3	300	.....	.....
	2,844	191,665	1,218	129,960	10	1,890	5	150

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COUNTY STATISTICS—Continued.

COUNTIES.	CATTLE.		SHEEP.		HOGS.		DOGS.		Sheep claims allowed during year.
	Number	Value	Number	Value	Number	Value	Number	Value	Amount
Adair	6,694	$113,239	4,067	$9,489	11,585	$55,920	1,030	.....	$426.00
Allen	5,395	96,315	4,255	9,793	11,824	52,838	.....	.....	.....
Anderson	5,200	92,600	16,000	36,500	2,100	9,875	.....	.....	.....
Ballard	4,462	66,395	895	2,150	17,635	58,752	809	.....	.....
Barren	.....	89,058	.....	14,189	.....	39,044	.....	.....	.....
Bath	6,028	113,891	6,446	617,372	5,367	31,384	862	.....	.....
Bell	2,605	30,466	792	14,497	1,621	5,827	693	.....	.....
Boone	6,832	206,535	14,359	61,758	12,478	86,036	1,313	.....	1,849.75
Bourbon	11,409	355,065	25,354	84,375	8,772	55,340	1,461	.....	485,.00
Boyd	8,000	390,850	2,000	835	4,000	29,825	.....	.....	.....
Boyle	1,354	160,946	6,657	20,155	6,792	38,527	1,082	.....	.....
Bracken	3,710	35,900	1,801	4,500	3,971	28,750	.....	.....	.....
Breathitt	10,000	200,000	10,000	30,000	15,000	45,000	1,145	$200.00	.....
Breckinridge	8,411	151,490	9,560	29,002	15,928	81,136	1,829	.....	.....
Bullitt	4,582	85,915	2,922	8,391	9,667	49,336	.....	.....	.....
Butler	6,885	110,710	4,342	9,790	11,106	51,743	1,145	.....	.....
Caldwell	5,228	63,844	2,785	5,475	7,803	26,647	838	.....	.....
Calloway	5,447	94,491	2,549	6,089	13,098	48,849	.....	.....	.....
Campbell	2,142	367,964	1,488	33,975	807	3,228	.....	.....	.....
Carlisle	3,298	51,528	2,385	7,354	14,067	56,334	725	.....	.....
Carroll	2,996	60,772	4,027	13,478	2,778	17,585	472	650.40	.....
Carter	7,813	144,176	1,786	4,711	6,026	37,065	933	.....	.....
Casey	6,046	109,913	6,085	15,057	9,537	45,987	1,495	819.00	.....
Christian	6,059	989,975	3,723	7,446	17,361	52,083	.....	.....	.....

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Clark	9,868	258,270	20,016	70,275	7,825	43,905	1,016	975.10	.....
Clay	4,875	146,241	10,000	11,692	2,565	1,095	1,667	.....	.....
Clinton	3,339	52,975	2,381	7,352	5,866	17,598	647	.....	.....
Crittenden	5,795	87,110	4,863	12,062	12,279	51,320	1,278	.....	.....
Cumberland	3,070	37,492	2,476	4,379	7,650	20,036	678	.....	.....
Daviess	4,300	65,800	4,708	9,416	11,380	52,525	.....	.....	.....
Edmonson	5,298	92,132	2,787	7,300	6,713	37,533	895	.....	.....
Elliott	5,816	117,534	2,231	5,030	6,783	34,415	991	.....	.....
Estill	4,933	92,346	1,330	3,242	7,444	36,742	1,062	214.20	.....
Fayette	6,434	112,350	11,315	28,230	4,978	9,956	.....	.....	.....
Fleming	9,013	208,752	8,956	30,586	12,144	79,321	1,827	2,782.75	.....
Floyd	9,346	158,182	3,593	6,153	14,659	58,648	1,427	254.50	.....
Franklin	4,825	102,376	5,648	18,405	4,696	32,550	833	566.00	.....
Fulton	3,915	55,055	4,330	11,404	12,181	56,682	978	.....	.....
Gallatin	820	14,978	2,090	6,181	1,818	8,416	489	256.00	.....
Garrard	6,357	143,250	9,156	24,226	9,536	58,922	1,537	939.20	.....
Grant	3,406	82,915	11,705	36,205	5,793	27,940	1,494	889.00	.....
Graves	9,469	146,022	4,656	1,282	23,034	97,865	2,834	.....	.....
Grayson	8,766	132,597	7,748	16,749	15,299	63,714	1,384	.....	.....
Green	4,950	104,350	2,030	6,125	3,500	21,000	.....	.....	.....
Greenup	6,149	140,325	617	1,545	3,597	21,250	.....	.....	.....
Hancock	2,644	45,910	1,779	4,749	4,257	23,267	867	.....	.....
Hardin	9,733	153,230	10,099	27,616	15,737	75,562	1,584	.....	.....
Harlan	3,584	70,763	3,171	6,923	5,633	18,348	950	.....	.....
Harrison	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hart	8,315	148,375	11,656	21,940	7,867	21,125	1,443	.....	.....
Henderson	5,568	111,360	2,776	6,940	.....	.....	.....	.....	.....
Henry	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hickman	4,429	63,461	5,236	13,620	17,380	70,441	963	.....	.....
Hopkins	5,894	117,880	3,284	8,210	10,335	51,675	.....	.....	.....
Jackson	5,493	103,020	4,879	11,442	5,855	3,198	916	323.00	.....
Jefferson	7,063	141,455	1,932	9,695	7,101	46,710	.....	.....	.....
Jessamine	3,141	60,835	7,540	20,175	4,233	25,455	607	.....	.....
Johnson	7,590	151,800	2,145	5,362	5,485	32,910	.....	.....	.....
Kenton	3,082	61,640	5,450	14,625	1,953	8,690	.....	.....	.....
Knott	5,665	98,675	3,827	6,131	11,015	40,185	1,044	82.50	.....
Knox	8,858	140,637	2,789	5,670	8,585	55,493	1,168	.....	.....
Larue	3,649	86,232	4,085	10,854	5,418	44,895	.....	.....	.....

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COUNTY STATISTICS—Continued.

COUNTIES.	CATTLE.		SHEEP.		HOGS.		DOGS.		Sheep claims allowed during year.
	Number	Value	Number	Value	Number	Value	Number	Value	Amount
Laurel	8,535	$147,783	5,183	$11,634	9,029	$42,337	1,305	.....	.....
Lawrence	11,114	222,280	3,493	8,232	7,880	31,520	.....	.....	.....
Lee	1,654	69,961	1,400	2,819	4,432	22,574	696	.....	$150.00
Leslie	4,760	82,625	2,906	5,994	9,045	28,405	909	.....	.....
Letcher	6,154	89,344	3,656	6,190	10,712	32,995	915	.....	.....
Lewis	6,081	128,977	1,771	5,435	5,162	33,725	.....	.....	.....
Lincoln	7,430	148,600	9,200	2,300	6,120	24,480	.....	.....	.....
Livingston	6,751	10,200	4,394	12,444	13,817	62,790	1,264	.....	.....
Logan	5,973	119,460	5,590	12,975	10,159	40,636	.....	.....	.....
Lyon	4,792	63,178	7,294	16,235	9,500	35,348	.....	.....	.....
Madison	4,548	301,025	8,499	20,592	12,008	73,423	2,668	.....	1,256.00
Magoffin	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marion	5,500	110,000	8,360	20,900	6,500	25,200	.....	.....	.....
Marshall	5,774	81,215	2,616	5,760	14,937	50,540	.....	.....	.....
Martin	2,531	50,620	1,126	2,815	3,782	12,850	.....	.....	.....
Mason	5,614	126,732	7,453	20,453	8,503	50,446	1,043	.....	1,545.00
McCracken	2,141	34,555	666	1,430	2,831	15,275	.....	.....	.....
McLean	2,903	42,660	2,342	5,539	7,245	30,197	796	.....	.....
Meade	4,127	84,603	6,725	17,312	8,722	34,888	.....	.....	.....
Menefee	1,342	32,516	1,174	1,498	2,458	11,739	679	.....	.....
Mercer	7,138	125,924	16,327	50,982	1,593	62,435	1,222	.....	1,008.00
Metcalfe	4,391	63,236	3,257	6,863	8,010	26,306	909	.....	.....
Monroe	2,330	46,600	2,106	5,265	8,148	32,592	.....	.....	.....
Montgomery	8,346	228,153	5,832	13,455	2,759	15,920	1,226	.....	.....

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Morgan	7,411	151,293	3,506	7,817	9,608	40,426	1,318	.....	.....
Muhlenberg	4,342	86,840	2,924	7,310	6,639	26,556	.....	.....	.....
Nelson	7,516	155,881	10,816	37,068	13,407	78,895	.....	.....	.....
Nicholas	5,067	106,265	17,170	54,060	6,308	36,615	1,107	.....	1,616.50
Ohio	9,012	160,342	6,176	15,091	13,659	68,684	1,832	.....	.....
Oldham	.....	.....	.....	.....	.....	.....	.....	.....	.....
Owen	.....	.....	.....	.....	.....	.....	.....	.....	.....
Owsley	3,000	60,000	2,000	4,375	2,500	9,000	1,000	.....	.....
Pendleton	5,385	107,700	9,040	22,600	5,995	23,980	.....	.....	.....
Perry	5,542	92,175	2,011	5,482	11,637	24,101	744	.....	42.00
Pike	9,015	180,300	4,250	10,625	12,349	49,396	.....	.....	.....
Powell	2,348	43,375	536	1,172	3,909	15,976	328	.....	21.00
Pulaski	13,980	221,392	8,714	23,612	14,003	66,246	2,864	.....	889.50
Robertson	2,528	52,468	6,251	21,082	3,310	19,840	613	.....	387.50
Rockcastle	5,050	126,250	1,950	4,875	3,250	13,000	.....	.....	.....
Rowan	2,078	76,158	1,140	2,866	4,083	21,285	754	.....	.....
Russell	3,816	66,834	3,407	7,014	8,825	34,934	.....	.....	.....
Scott	5,411	134,019	19,462	62,277	6,039	39,956	1,017	.....	364.66
Shelby	9,637	257,760	15,552	57,110	14,859	85,140	.....	.....	.....
Simpson	4.151	103,775	3,163	7,907	10,427	41,708	.....	.....	.....
Spencer	4.814	76,516	7,158	16,220	7,067	28,585	.....	.....	.....
Taylor	3,770	94,250	1,675	4,187	3,250	13,000	.....	.....	.....
Todd	3.993	99,825	2.931	7,327	7,848	31,392	.....	.....	.....
Trigg	6.100	152,500	4.243	10.607	15,391	61,564	.....	.....	.....
Trimble	3,120	69,008	2.347	9,791	4,415	27,425	795	.....	35.50
Union	7.976	117,669	2,382	6,721	19,910	78,836	270	.....	.....
Warren	8,830	151,453	5,679	15,223	17,845	99,603	.....	.....	.....
Washington	2.434	60,850	8.015	20,037	3,274	13,096	.....	.....	.....
Wayne	9.676	241.900	7,379	18.447	17,673	70.692	.....	.....	.....
Webster	3.909	97,725	1,983	4.967	9,158	36.632	.....	.....	.....
Whitley	12 341	190,579	5.515	10.546	11.688	53.432	1,707	.....	.....
Wolfe	3 200	40,000	2.000	4,800	4,620	14.000	415	.....	.....
Woodford	3 912	109.615	10.443	39,500	6,452	53.607	685	.....	763.20

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COUNTY STATISTICS—Continued.

COUNTIES.	POTATOES		ONIONS		CABBAGE		Truck Garden. Number	Poultry products. Amount sold during year	Dairies. Number	Cows. Number	Orchards operated for commercial purposes. Number
	Number of acres	Number bushels per acre	Number of acres grown	Number bushels per acre	Number of acres grown	Number of tons per acre					
Adair	250	75	....	....	....	.....	....	$30,000	.....	.....	.....
Allen	.....	....	....	....	....	.....	....	25,000	.....	.....	.....
Anderson	.....	....	....	....	....	.....	....	43,000	.....	.....	.....
Ballard	250	90	90	160	125	1½	....	60,000	.....	.....	.....
Barren	125	100	100	160	200	1¾	....	58,000	.....	.....	.....
Bath	75	80	75	175	50	1	....	48,000	.....	.....	.....
Bell	100	100	25	300	100	1½	5	20,000	2	65	.....
Boone	350	125	125	275	125	1¾	2	50,000	2	50	10
Bourbon	500	125	350	250	525	2	10	100,000	4	135	5
Boyd	450	125	50	275	50	2	10	60,000	12	200	6
Boyle	400	135	350	250	300	2	7	74,500	5	560	.....
Bracken	325	120	115	225	180	1½	5	95,000	.....	.....	.....
Breathitt	400	90	500	250	250	1	3	3,000	1	10	.....
Breckinridge	250	125	90	240	125	1½	....	50,000	.....	.....	.....
Bullitt	80	60	50	225	20	1	....	.....	.....	.....	.....
Butler	75	100	65	200	50	1	....	30,000	.....	.....	.....
Caldwell	125	125	80	225	75	1½	....	35,000	1	75	.....
Calloway	250	125	75	200	100	1½	....	6,000	.....	.....	.....
Campbell	1,200	100	50	225	50	3	100	6,500	29	1,038	105
Carlisle	325	75	160	175	175	1½	3	60,000	.....	.....	1
Carroll	125	90	75	200	80	1½	....	2,500	.....	.....	.....
Carter	200	75	50	175	60	1½	....	12,500	.....	.....	.....
Casey	125	90	60	175	80	1½	....	25,000	.....	.....	.....
Clark	120	90	100	250	50	1½	3	8,000	.....	.....	.....

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Clay	250	100	50	210	60	1½	....	2,000	.....	.....	.....
Clinton	.....	....	....	....	....	.....	....	.....	.....	.....	.....
Crittenden	75	90	60	200	40	1½	....	38,000	.....	.....	.....
Cumberland	.....	....	....	....	....	.....	....	.....	.....	.....	.....
Christian	200	150	20	250	50	2	4	15,000	11	206	.....
Daviess	350	80	40	200	25	1½	....	12,000	.....	.....	.....
Edmonson	75	100	25	175	45	1	....	60,000	.....	.....	.....
Elliott	350	125	75	225	45	1½	....	7,500	.....	.....	.....
Estill	.....	....	....	....	....	.....	....	4,000	.....	.....	.....
Fayette	825	125	275	250	125	1½	25	.....	39	1,256	.....
Fleming	200	125	125	250	9	1½	....	65,000	.....	.....	.....
Floyd	125	100	25	215	40	1	....	35,000	.....	.....	.....
Franklin	13	140	40	229	25	2	1	90,000	3	40	.....
Fulton	150	125	75	200	40	1½	....	.....	3	100	.....
Gallatin	75	100	40	190	35	1½	....	5,000	2	12	.....
Garrard	125	125	60	225	50	2	....	54,000	1	50	.....
Grant	75	125	40	190	35	1½	....	75,000	5	72	.....
Graves	40	160	20	190	25	1	....	.....	.....	.....	.....
Grayson	550	75	10	175	10	1½	....	2,500	4	87	.....
Green	75	80	23	180	15	1	....	42,000	.....	.....	.....
Greenup	500	150	400	200	350	2	....	22,000	.....	.....	.....
Hancock	125	125	75	225	90	1½	....	40,000	.....	.....	.....
Hardin	225	100	100	215	75	1	....	80,000	1	40	.....
Harlan	250	125	75	175	60	1	....	.....	.....	.....	.....
Harrison	125	108	60	190	50	1	....	40,000	.....	.....	.....
Hart	25	100	25	200	10	2	....	2,500	.....	.....	.....
Henderson	250	100	275	190	100	2	7	25,000	14	140	.....
Henry	.....	....	....	....	....	.....	....	.....	.....	.....	.....
Hickman	125	100	40	200	20	1½	2	6,000	.....	.....	.....
Hopkins	250	100	122	150	118	1½	5	15,000	5	75	.....
Jackson	200	100	75	190	25	1½	....	3,000	.....	.....	.....
Jefferson	5,000	125	600	225	500	2	500	51,000	43	1,655	34
Johnson	125	100	30	175	25	1½	....	2,000	.....	.....	.....
Jessamine	325	100	120	180	114	1½	4	75,000	2	60	.....
Kenton	1,250	125	100	225	200	2	200	100,000	59	1,587	.....
Knott	75	100	50	175	25	1	....	.....	.....	.....	.....
Knox	250	100	20	200	100	1	....	10,000	.....	.....	.....
Larue	125	100	40	190	30	1½	....	.....	2	40	.....

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COUNTY STATISTICS—Continued.

COUNTIES.	POTATOES		ONIONS		CABBAGE		Truck Garden. Number	Poultry products. Amount sold during year	Dairies. Number	Cows. Number	Orchards operated for commercial purposes. Number
	Number of acres	Number bushels per acre	Number of acres grown	Number bushels per acre	Number of acres grown	Number tons per acre					
Laurel	500	100	50	300	10	1½					
Lawrence	250	125	75	250	50	1½		$25,000			
Lee	125	100	40	225	30	1					
Leslie	200	150	75	225	20	1½		1,000			
Letcher	100	120	60	190	35	1					
Lewis								10,000			
Lincoln	102	125	41	175	31½	2	2	6,500	1	150	
Livingston											
Logan	400	75						15,000			
Lyon								19,000			
Madison	350	125	175	250	150	2	5				
Magoffin											
Marion	125	90	75	200	40	1½		2,500			
Marshall								20,000			
Martin	100	75	50	200	60	1		1,400			
Mason	325	100	150	225	75	1½		200,000	3	175	
McCracken	150	100	80	215	40	2		2,000			
McLean	75	100	10	200	25	3		7,000			
Meade	65	110	30	190	40	1½		35,000			260
Menefee	195	75	75	175	60	1½		42,000			
Mercer	350	125	60	200	45	2		10,000			
Metcalfe											
Monroe	250	90	75	180	60	1½					
Montgomery	117	100	73	225	52	2	1	175,000	3	77	

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Morgan	75	60	30	150	40	1	....	6,000	.....	.....	.....
Muhlenberg	125	100	85	175	75	1½	....	10,000	.....	.....	.....
Nelson	150	90	60	175	75	1	....	3,500	40	501	.....
Nicholas	220	60	125	145	95	2	5	10,000	3	15	.....
Ohio	200	75	150	215	75	2	....	40,000	.....	.....	.....
Oldham	.....	....	....	....	....	.....	....	.....	.....	.....	.....
Owen	.....	....	....	....	....	.....	....	.....	.....	.....	.....
Owsley	250	75	100	150	75	1½	....	.....	.....	.....	.....
Pendleton	300	100	125	200	100	2	....	9,500	.....	.....	.....
Perry	250	75	75	150	60	½	....	.....	.....	.....	.....
Pike	500	60	175	195	125	1	....	17,500	.....	.....	.....
Powell	.....	....	....	....	....	.....	....	5,000	.....	.....	.....
Pulaski	100	100	20	300	25	2	....	30,000	3	70	.....
Robertson	75	60	40	150	30	1	....	2,700	.....	.....	.....
Rockcastle	250	75	75	190	40	1½	....	2,100	.....	.....	.....
Rowan	125	80	30	175	25	1	....	6,000	.....	.....	.....
Russell	200	100	60	150	40	1½	....	3,000	.....	.....	.....
Scott	500	100	125	175	75	2	....	60,000	4	150	.....
Shelby	325	75	140	200	75	2	....	.....	.....	.....	.....
Simpson	250	80	75	175	60	1½	....	12,000	.....	.....	.....
Spencer	300	100	125	175	80	2	....	.....	.....	.....	.....
Taylor	250	90	75	175	60	1½	....	30,000	.....	.....	.....
Todd	300	100	125	200	90	2¼	....	.....	.....	.....	.....
Trigg	125	75	60	150	40	2	....	10,000	.....	.....	.....
Trimble	150	60	40	150	30	2	....	4,000	.....	.....	.....
Union	.....	....	....	....	....	.....	....	.....	.....	.....	.....
Warren	100	50	60	175	35	1½	3	5,000	7	230	.....
Washington	75	60	40	160	45	2	....	25,000	3	35	.....
Wayne	800	90	150	175	500	2	....	9,500	2	18	.....
Webster	.....	....	....	....	....	.....	....	10,000	.....	.....	.....
Whitley	1,000	125	25	250	25	2½	12	5,000	.....	.....	.....
Wolfe	500	100	75	250	40	2	....	.....	.....	.....	.....
Woodford	125	135	87½	225	48	2¼	4	105,000	1	60	1

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Honorable M. C. Rankin,
Commissioner of Agriculture,
Frankfort, Kentucky.

Dear Sir:

In compliance with Section 6 of the Fertilizer Law, I append herewith the financial statement showing the receipts accruing under the law, also the expenditures, from July 1, 1909, to June 30, 1911, inclusive.

Yours very truly,
M. A. SCOVELL,
Director.

ITEMIZED STATEMENT OF RECEIPTS UNDER THE FERTILIZER LAW FROM JULY 1, 1909, to JUNE 30, 1910.

July	5.	Northwestern Fertilizing Co	$100.00
July	12.	T. J. Turley Co.	10.00
July	12.	Federal Chemical Co.	93.75
July	13.	Empire Guano Co.	10.00
July	14.	Smith Brothers	10.00
July	14.	Armour Fertilizer Works	10.00
July	16.	A. W. Pickerill	20.00
July	19.	Michigan Carbon Works	12.50
July	20.	Louisville Fertilizer Company	31.00
July	21.	Louisville Fertilizer Company	72.00
July	23.	Tennessee Chemical Co.	61.00
July	23.	Jones Fertilizer Co.	30.00
July	24.	Bowker Fertilizer Works	678.75
July	29.	Hirsh, Stein & Co.	60.00
July	30.	Continental Fertilizer Co.	61.00
July	30.	Hirsh, Stein & Co.	10.00
Aug.	3.	Tennessee Chemical Co.	31.00
Aug.	3.	A. W. Pickerill	7.50
Aug.	6.	Michigan Carbon Works	530.25
Aug.	6.	Northwestern Fertilizing Co	537.00
Aug.	6.	American Agricultural Chemical Co.	224.00
Aug.	6.	Packers Fertilizer Association	175.00
Aug.	9.	Jarecki Chemical Co.	156.25
Aug.	13.	Pero and Stoecker	25.00
Aug.	14.	Federal Chemical Co.	1,206.25
Aug.	23.	Michigan Carbon Works	50.00
Aug.	23.	Great Southern Phosphate Co.	10.00
Aug.	25.	Pero and Stoecker	50.00
Aug.	28.	Tennessee Chemical Co.	31.00

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Aug.	28.	Jones Fertilizer Co.	$31.00
Sept.	2.	Mt. Pleasant Fertilizer Co.	20.00
Sept.	2.	Duncan and Brother	20.00
Sept.	6.	National Fertilizer Co.	50.00
Sept.	9.	Read Phosphate Co.	250.00
Sept.	9.	Louisville Fertilizer Co.	31.00
Sept.	9.	Jones Fertilizer Co.	31.00
Sept.	10.	Tennessee Chemical Co.	31.00
Sept.	10.	Continental Fertilizer Co.	31.00
Sept.	10.	Taylor and Powell	80.00
Sept.	11.	Mt. Pleasant Fertilizer Co...	10.00
Sept.	14.	Jarecki Chemical Co.	156.25
Sept.	14.	Pero and Stoecker	50.00
Sept.	14.	Tennessee Chemical Co.	31.00
Sept.	14.	Duncan and Brother	20.00
Sept.	14.	National Fertilizer Co.	100.00
Sept.	15.	Hirsh, Stein & Co.	156.25
Sept.	15.	Jones Fertilizer	10.00
Sept.	15.	Virginia-Carolina Chemical Co.	20.00
Sept.	16.	Bowker Fertilizer Works	97.92
Sept.	16.	Continental Fertilizer Co.	31.00
Sept.	16.	Jones Fertilizer Co.	31.00
Sept.	16.	Michigan Carbon Works	212.50
Sept.	16.	Northwestern Fertilizing Co.	62.50
Sept.	17.	Morris & Co.	50.00
Sept.	22.	Tennessee Chemical Co.	20.00
Sept.	22.	Wood, Stubbs & Co.	62.50
Sept.	22.	Louisville Fertilizer Co.	82.00
Sept.	22.	Pero and Stoecker	50.00
Sept.	23.	Tennessee Chemical Co.	20.00
Sept.	27.	Louisville Fertilizer Co.	31.00
Sept.	27.	Hirsh, Stein & Co.	62.50
Sept.	28.	Bowker Fertilizer Works	153.83
Sept.	28.	Duncan and Brother	10.00
Sept.	28.	Tennessee Valley Fertilizer Co.	80.00
Sept.	29.	Jarecki Chemical Co.	218.75
Sept.	29.	Tennessee Chemical Co.	20.00
Sept.	29.	Louisville Fertilizer Co.	40.00
Sept.	30.	Standard Guano & Chem. Mfg. Co.	25.00
Oct.	1.	Hirsh, Stein & Co.	62.50
Oct.	2.	American Agricultural Chemical Co.	50.00
Oct.	2.	Bowker Fertilizer Works	41.50
Oct.	2.	Tennessee Valley Fertilizer Co.	10.00
Oct.	2.	Mt. Pleasant Fertilizer Co.	250.00
Oct.	2.	Tennessee Chemical Co.	20.00
Oct.	6.	Read Phosphate Co.	200.00
Oct.	9.	Louisville Fertilizer Co.	12.50

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Oct.	9.	Tennessee Chemical Co.	$20.00
Oct.	12.	Kentucky Fertilizer Co.	170.00
Oct.	12.	Federal Chemical Co.	1,259.38
Oct.	12.	Globe Fertilizer Co.	15.62
Oct.	14.	Louisville Fertilizer Co.	12.50
Oct.	16.	Tennessee Chemical Co.	12.50
Oct.	25.	Bowker Fertilizer Works	56.25
Nov.	5.	Morris & Co.	100.00
Dec.	15.	Federal Chemical Co.	62.50
Jan.	1.	A. D. Adair & McCarty Brothers	50.00
Jan.	1.	Hopkins Fertilizer Co.	60.00
Jan.	1.	Mt. Pleasant Fertilizer Co.	190.00
Jan.	1.	Great Southern Phosphate Co.	100.00
Jan.	1.	Armour Fertilizer Works	200.00
Jan.	1.	Hopkins Fertilizer Co.	20.00
Jan.	5.	American Agrl. Chem. Co.	190.00
Jan.	5.	Bowker Fertilizer Works	140.00
Jan.	5.	Michigan Carbon Works	140.00
Jan.	5.	Northwestern Fertilizer Co.	180.00
Jan.	5.	Packers Fertilizer Association	130.00
Jan.	8.	Read Phosphate Co.	200.00
Jan.	8.	Empire Guano Co.	120.00
Jan.	10.	Swift & Co.	150.00
Jan.	11.	Louisville Fertilizer Co.	180.00
Jan.	11.	Continental Fertilizer Co.	160.00
Jan.	11.	Tennessee Chemical Co.	170.00
Jan.	11.	Jones Fertilizer Co.	150.00
Jan.	12.	A. D. Adair & McCarty Brothers	30.00
Jan.	12.	Great Southern Phosphate Co.	10.00
Jan.	17.	Hirsh, Stein & Co.	150.00
Jan.	18.	Groves Co.	100.00
Jan.	20.	Tuscarora Fertilizer Co.	55.00
Jan.	21.	National Fertilizer Co.	50.00
Jan.	26.	Smith Brothers	60.00
Jan.	26.	Virginia-Carolina Chemical Co.	90.00
Jan.	28.	Morris & Co.	110.00
Jan.	31.	Tuscarora Fertilizer Co.	55.00
Jan.	31.	National Fertilizer Co.	50.00
Feb.	3.	Evansville Packing Co	90.00
Feb.	3.	Duncan and Brother	20.00
Feb.	7.	Smith Brothers	130.00
Feb.	10.	Jarecki Chemical Co.	62.50
Feb.	12.	National Fertilizer Co.	50.00
Feb.	14.	Federal Chemical Co.	220.00
Feb.	14.	Globe Fertilizer Co.	280.00
Feb.	14.	Fox Chemical Co.	230.00
Feb.	14.	Kentucky Fertilizer Co.	170.00

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Feb.	14.	Wood, Stubbs & Co.	$50.00
Feb.	17.	Standard Guano & Chem. Mfg. Co.	50.00
Feb.	24.	Duncan and Brother	10.00
Mar.	3.	Smith Brothers	10.00
Mar.	4.	Peruvian Guano Corporation	10.00
Mar.	5.	Hirsh, Stein & Co.	10.00
Mar.	9.	Pero and Stoecker	50.00
Mar.	9.	A. W. Pickerill	20.00
Mar.	14.	Hirsch Stein & Co.	20.00
Mar.	15.	National Fertilizer Co.	10.00
Mar.	15.	T. J. Turley Co.	20.00
Mar.	16.	Jarecki Chemical Co.	93.75
Mar.	16.	Cincinnati Phosphate Co.	110.00
Mar.	16.	Kaufman Fertilizer Co.	110.00
Mar.	16.	Queen City Fertilizer Co.	40.00
Mar.	16.	Duncan and Brother	10.00
Mar.	16.	Evansville Packing Co.	25.00
Mar.	16.	Grayson County Fertilizer Co.	20.00
Mar.	18.	Hopkins Fertilizer Co.	15.00
Mar.	18.	National Fertilizer Co.	10.00
Mar.	19.	Hirsh, Stein & Co.	25.00
Mar.	21.	C. S. Brent	20.00
Mar.	21.	Great Southern Phosphate Co.	25.00
Mar.	23.	The Groves Co.	100.00
Mar.	24.	American Agrl. Chem. Co.	118.75
Mar.	24.	Bowker Fertilizer Works	915.50
Mar.	24.	Northwestern Fertilizing Co.	174.75
Mar.	24.	Michigan Carbon Works	345.00
Mar.	24.	Packers Fertilizer Association	24.75
Mar.	24.	J. C. Jones Fertilizer Co.	10.00
Mar.	29.	Read Phosphate Co.	100.00
Mar.	30.	National Fertilizer Co.	150.00
Mar.	31.	Hirsh, Stein & Co.	25.00
Apr.	1.	Pero and Stoecker	50.00
Apr.	2.	Read Phosphate Co.	300.00
Apr.	4.	Armour Fertilizer Works	500.00
Apr.	4.	Virginia-Carolina Chemical Co.	125.00
Apr.	5.	Duncan and Brother	20.00
Apr.	6.	Hopkins Fertilizer Co.	5.00
Apr.	6.	The Groves Co.	25.00
Apr.	8.	Hirsh, Stein & Co.	62.50
Apr.	8.	American Agrl. Chem. Co.	62.50
Apr.	8.	Michigan Carbon Works	139.25
Apr.	8.	The Groves Co.	75.00
Apr.	8.	Hirsh, Stein & Co.	83.33
Apr.	8.	Louisville Fertilizer Co.	100.00
Apr.	9.	T. J. Turley Co.	10.00

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Apr.	11.	Evansville Packing Co.	$25.00
Apr.	12.	Louisville Fertilizer Co.	10.00
Apr.	15.	Federal Chemical Co.	2,443.75
Apr.	15.	Hirsh, Stein & Co.	62.50
Apr.	15.	Canton Lime & Fertilizer Co.	30.00
Apr.	19.	Duncan and Brother	20.00
Apr.	21.	Michigan Carbon Works	31.25
Apr.	22.	National Fertilizer Co.	50.00
Apr.	25.	Armour Fertilizer Works	312.50
Apr.	30.	American Agrl. Chem. Co.	611.75
Apr.	30.	Bowker Fertilizer Co.	656.00
Apr.	30.	Michigan Carbon Works	162.50
May	2.	Virginia-Carolina Chemical Co.	10.00
May	5.	Grayson County Fertilizer Co.	5.00
May	5.	Duncan and Brother	20.00
May	6.	C. S. Brent	12.50
May	11.	Michigan Carbon Works	62.50
May	13.	Jarecki Chemical Co.	687.50
May	13.	Kaufman Fertilizer Co.	10.00
May	14.	Read Phosphate Co.	50.00
May	20.	Federal Chemical Co.	1,250.00
May	21.	American Agrl. Chem. Co.	200.00
May	21.	Tennessee Chemical Co.	50.00
May	25.	Tennessee Chemical Co.	93.75
May	25.	Evansville Packing Co.	25.00
May	28.	Bowker Fertilizer Works	137.50
May	28.	Duncan and Brother	10.00
May	30.	National Fertilizer Co.	50.00
June	7.	Jarecki Chemical Co.	62.50
June	7.	Swift & Co.	156.25
June	14.	Federal Chemical Co.	281.25
June	17.	Hopkins Fertilizer Co.	20.00
June	17.	Louisville Fertilizer Co.	10.00
June	24.	Tennessee Chemical Co.	156.25
June	30.	Read Phosphate Co.	20.00
June	30.	The Groves Co.	20.00
June	30.	Southern Seed Co.	20.00

ITEMIZED STATEMENT OF EXPENDITURES UNDER THE FERTILIZER LAW FROM JULY 1, 1909 TO JUNE 30, 1910.

July	2.	M. A. Scovell, Dir., Payroll	$79.80
July	8.	H. Woosley, Exp. Hardinsburg	47.49
July	8.	W. B. Wilson, Trav. Exp.	3.24
July	8.	G. C. Routt, Labor, Hardinsburg, Exp.	24.50

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July	8.	Jasper Pratt, Work, Hindman Plots	$39.28
July	22.	M. A. Scovell, Dir., Exp. Adv.	1.15
July	22.	H. Garman, Trav. Exp.	21.11
July	22.	Jas. E. Hughes, Prtg. Bul. 138 and tags	294.20
July	22.	The Deming Co., Sprayer	13.38
July	22.	American Sprayer & Supply Co., Sprayer	85.00
July	22.	Eimer and Amend, Chem. Sup	13.80
July	31.	H. E. Curtis, Sal. July	200.00
July	31.	Geo. Roberts, Sal. July	150.00
July	31.	Wm. Rodes, Sal. July	75.00
July	31.	D. C. Frazee, Sal. July	25.00
Aug.	2.	M. A. Scovell, Dir., Payroll, Fert.	108.00
Aug.	6.	E. J. Kinney, Trav. Exp.	3.69
Aug.	6.	Jasper Pratt, Work, Hindman	33.75
Aug.	6.	Jas. E. Hughes, Prtg. tags	81.73
Aug	14.	G. C. Routt, Lab. July—Hardinsburg Exp.	35.00
Aug.	19.	Reyburn Mfg. Co.	175.00
Aug.	25.	H. Woosley, Exp. Hardinsburg Expt.	22.20
Aug.	25.	Wood, Stubbs & Co., Seeds—Hardinsburg	4.18
Aug.	25.	Eimer and Amend, Chem. Supplies	72.98
Aug.	31.	H. E. Curtis, Sal.—Aug.	200.00
Aug.	31.	Geo. Roberts, Sal.—Aug.	150.00
Aug.	31.	E. F. Worthington, Sal.—Aug.	62.50
Aug.	31.	Wm. Rodes, Sal.—Aug.	75.00
Sept.	1.	M. A. Scovell, Dir., Payroll	99.00
Sept.	9.	W. B. Wilson, Exp. Eminence	6.31
Sept.	9.	G. C. Routt, Services—Aug.	35.00
Sept.	9.	Lexington Utilities Co., Light—Aug.	10.86
Sept.	9.	Central Ky. Nat. Gas. Co., Gas—Aug.	15.30
Sept.	9.	Jas. E. Hughes, Prtg. tags—Aug.	161.89
Sept.	9.	John I. Claybrooke, Insp.	57.73
Sept.	9.	Jasper Pratt, Work—Hindman	32.50
Sept.	23.	M. A. Scovell, Dir., Exp. Adv.	1.91
Sept.	23.	S. D. Averitt, Trav. Exp.—Denver	78.05
Sept.	23.	O. M. Shedd, Trav. Exp.—Denver	79.15
Sept.	23.	Lexington H. & M. Co., Water	19.95
Sept.	23.	John I. Claybrooke, Insp.	92.52
Sept.	30.	H. E. Curtis, Sal.—Sept.	200.00
Sept.	30.	J. W. Nutter, Sal.—Sept.	100.00
Sept.	30.	Geo. Roberts, Sal.—Sept.	75.00
Sept.	30.	E. F. Worthington, Sal.—Sept.	62.50
Sept.	30.	Wm. Rodes, Sal.—Sept.	75.00
Sept.	30.	D. C. Frazee, Sal.—Sept.	25.00
Oct.	1.	Security Trust Co., Payment—Kinkead Note	2,500.00
Oct.	4.	C. H. Schertius, Insp.	61.54
Oct.	9.	James E. Hughes, Prtg. tags	59.37
Oct.	9.	John I. Claybrooke, Insp.	88.05

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Oct.	9.	John W. McFarlin, Insp.	$173.26
Oct.	9.	Jasper Pratt, Work—Hindman	32.50
Oct.	18.	G. C. Routt, Exp. Hardinsburg	12.30
Oct.	22.	M. A. Scovell, Dir., Exp. Adv	5.95
Oct	22.	H. Woosley, Exp. Hardinsburg	90.37
Oct.	22.	E. Tenn. Tel. Co., Rentals, Oct., Nov., Dec.	18.00
Oct.	30.	H. E. Curtis, Sal.—Oct.	200.00
Oct.	30.	Geo. Roberts, Sal.—Oct.	75.00
Oct.	30.	E. F. Worthington, Sal.—Oct.	25.00
Oct.	30.	Wm. Rodes, Sal.—Oct.	75.00
Nov.	1.	M. A. Scovell, Dir., Payroll—Farm	472.12
Nov.	5.	Jas. E. Hughes, Prtg. tags	9.12
Nov.	5.	John W. McFarlin, Insp.	129.95
Nov.	26.	F. T. Justice & Co., Cement Work	423.39
Nov.	26.	Jasper Pratt, Work—Hindman Plots	32.50
Nov.	26.	M. A. Scovell, Dir., Exp. Adv.	4.00
Nov.	26.	Fayette Home Tel. Co., Rental	14.95
Nov.	30.	H. E. Curtis, Sal.—Nov.	200.00
Nov.	30.	Geo. Roberts, Sal.—Nov.	75.00
Nov.	30.	E. F. Worthington, Sal.—Nov.	25.00
Nov.	30.	Wm. Rodes, Sal.—Nov.	75.00
Nov.	30.	D. C. Frazee, Sal.—Nov.	25.00
Dec.	23.	Elmer and Amend, App. etc.	65.87
Dec.	31.	M. A. Scovell, Sal.—Dec.	350.00
Dec.	31.	H. E. Curtis, Sal.—Dec.	200.00
Dec.	31.	Geo. Roberts, Sal.—Dec.	75.00
Dec.	31.	E. F. Worthington, Sal.—Dec.	25.00
Dec.	31.	Wm. Rodes, Sal.—Dec.	75.00
Jan.	7.	Lexington Utilities Co., Light	31.32
Jan.	7.	Central Ky. Nat. Gas. Co., Gas	11.70
Jan.	7.	Kinkead Coal Co., Coal	56.82
Jan.	25.	Lexington H. & M. Co., Water, etc.	44.61
Jan.	25.	Taylor Beard, Rent	111.19
Jan.	25.	J. W. Ford, Bal. growing tobacco	31.89
Jan.	25.	Reyburn Mfg. Co., 1 million tags and paper	376.50
Jan.	31.	H. E. Curtis, Sal.—Jan.	200.00
Jan.	31.	J. W. Nutter, Sal.—Jan.	100.00
Jan.	31.	Geo. Roberts, Sal.—Jan.	75.00
Jan.	31.	E. F. Worthington, Sal.—Jan.	25.00
Jan.	31.	Wm. Rodes, Sal.—Jan.	75.00
Jan.	31.	D. C. Frazee, Sal.—Jan.	25.00
Feb.	4.	James E. Hughes, Prtg. Stamps	56.00
Feb.	4.	Welsh & Murray, Prtg. Tags	182.38
Feb.	21.	M. A. Scovell, Dir., Exp. Adv.	47.88
Feb.	21.	Sunlight Double Glass Co., 6 Sash	10.13
Feb.	28.	H. E. Curtis, Sal.—Feb.	200.00
Feb.	28.	Geo. Roberts, Sal.—Feb.	75.00

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Feb.	28.	E. F. Worthington, Sal.—Feb.	$25.00
Feb.	28.	Wm. Rodes, Sal.—Feb.	75.00
Feb.	4.	Welsh & Murray, Prtg. Tags	182.38
Mar.	4.	Jas. E. Hughes, Ptrg. Stamps	24.00
Mar.	22.	M. A. Scovell, Dir., Exp. Adv.	13.68
Mar.	22.	H. Woosley, Exp. Work—Hardinsburg	50.82
Mar.	22.	Reyburn Mfg. Co., 500,000 Tags	175.00
Mar.	31.	H. E. Curtis, Sal.—Mar.	200.00
Mar.	31.	Geo. Roberts, Sal.—Mar.	75.00
Mar.	31.	E. F. Worthington, Sal.—Mar.	25.00
Mar.	31.	Wm. Rodes, Sal.—Mar.	75.00
Mar.	31.	D. C. Frazee, Sal.—Mar.	25.00
Apr.	1.	B. D. Wilson, Lab. Work	54.00
Apr.	8.	Welsh & Murray, Prtg. Tags—Mar.	109.34
Apr.	19.	Jasper Pratt, Work—Mar.	5.00
Apr.	25.	M. A. Scovell, Dir., Exp. Adv.	13.44
Apr.	25.	Jas. E. Hughes, Prtg. Stamps	22.75
Apr.	25.	Fed. Chem. Co., 2 tons acid phos., 1 nitrate soda	84.40
Apr.	25.	Swift & Co., 1 ton Dried Blood	53.20
Apr.	25.	American Agrl. Chem. Co., Dis. Bone	3.00
Apr.	25.	Reyburn Mfg. Co., Gummed Paper	26.50
Apr.	30.	H. E. Curtis, Sal.—Apr.	200.00
Apr.	30.	Geo. Roberts, Sal.—Apr.	75.00
Apr.	30.	E. F. Worthington, Sal. —Apr.	25.00
Apr.	30.	Wm. Rodes, Sal.—Apr.	75.00
May	2.	B. D. Wilson, Payroll	52.00
May	9.	John I. Claybrooke, Insp.	81.71
May	9.	Central Ky. Nat. Gas. Co., Gas	12.30
May	9.	Lexington Utilities Co., Light	13.98
May	9.	Kinkead Coal Co., Coal	1.15
May	9.	Welsh & Murray, Prtg. Tags	65.35
May	9.	Jasper Pratt, Work—Hindman Plots	40.10
May	18.	C. H. Scherffius, Insp.	35.15
May	20.	J. I. Claybrooke, Insp.	88.12
May	26.	M. A. Scovell, Dir., Exp. Adv.	12.70
May	26.	Lexington H. & M. Co., Water	28.02
May	26.	Jas. E. Hughes, Prtg. Stamps	16.00
May	26.	Reyburn Mfg. Co., Tags and Paper	208.50
May	26.	Elmer and Amend, App. and Sups.	133.60
May	27.	C. H. Scherffius, Insp.	61.11
May	31.	H. E. Curtis, Sal.—May	200.00
May	31.	John W. Nutter, Sal.—May	100.00
May	31.	Geo. Roberts, Sal.—May	75.00
May	31.	E. F. Worthington, Sal. —May	25.00
May	31.	Wm. Rodes, Sal.—May	75.00
May	31.	D. C. Frazee, Sal.—May	25.00
June	1.	B. D. Wilson, Payroll	52.00

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June	9.	S. C. Jones, Trav. Exp.	$1.01
June	9.	Geo. Roberts, Trav. Exp.	13.75
June	9.	Welsh & Murray, Prtg. Tags	22.72
June	9.	John I. Claybrooke, Insp.	110.15
June	9.	Jasper Pratt, Work—Hindman Plots	34.40
June	22.	John I. Claybrooke, Insp.	95.85
June	27.	M. A. Scovell, Dir., Exp. Adv.	36.75
June	30.	H. E. Curtis, Sal.—June	200.00
June	30.	Geo. Roberts, Sal.—June	75.00
June	30.	E. F. Worthington, Sal.—June	62.50

SUMMARY STATEMENT.

JULY 1, 1909 TO JUNE 30, 1910.

Receipts, July 1, 1909 to June 30, 1910		$25,810.33
Expenditures, July 1, 1909 to June 30, 1910—		
Overdraft, July 1, 1909	$3,961.94	
Salaries	5,462.50	
Labor	1,460.85	
Publications	279.00	
Printing Tags	1,998.02	
Postage and Stationery	34.50	
Freight and Express	137.11	
Heat, Light and Water	246.01	
Chemical Supplies	286.25	
Seed, Plants and Sundry Supplies	20.55	
Fertilizers	141.60	
Tools, Implement and Machinery	103.60	
Traveling Expenses	206.31	
Inspecting	1,075.14	
Buildings and Land	3,044.71	
Contingent	31.89	$18,489.98
Balance on hand July 1, 1910		$7,320.35

ITEMIZED STATEMENT OF RECEIPTS UNDER THE FERTILIZER LAW FROM

JULY, 1910 TO JUNE 30, 1911.

July	11.	T. J. Turley Co.	$10.00
July	18.	Wood, Stubbs & Co.	40.00
July	20.	Hirsh, Stein & Co.	20.00
July	20.	The Groves Co.	300.00
July	27.	Swift & Co.	10.00
July	28.	American Agrl. Chem. Co.	108.00
July	28.	Bowker Fertilizer Works	513.25

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July 28.	Michigan Carbon Works	$305.00
July 28.	Northwestern Fertilizer Co.	223.75
July 30.	A. W. Pickerill	25.00
Aug. 6.	National Fertilizer Co.	30.00
Aug. 6.	Hirsh, Stein & Co.	135.42
Aug. 10.	National Fertilizer Co.	50.00
Aug. 11.	American Agrl. Chem Co.	206.25
Aug. 12.	Federal Chemical Co.	156.25
Aug. 16.	Louisville Fertilizer Co.	250.00
Aug. 17.	Swift & Co.	156.25
Aug. 17.	Pero and Stoecker	100.00
Aug. 19.	Tennessee Chemical Co.	125.00
Aug. 19.	Evansville Packing Co.	50.00
Aug. 19.	Hirsh, Stein & Co.	104.16
Aug. 22.	Morris & Co.	100.00
Aug. 22.	Swift & Co.	10.00
Aug. 23.	Taylor and Powell	50.00
Aug. 23.	Hopkins Fertilizer Co.	25.00
Aug. 24.	National Fertilizer Co.	70.00
Aug. 25.	Grayson County Fertilizer Co.	5.00
Aug. 29.	Armour Fertilizer Works	15.00
Aug. 29.	Southern Seed Co.	50.00
Aug. 30.	American Agrl. Chemical Co.	268.50
Aug. 30.	Hopkins Fertilizer Co.	50.00
Sept. 1.	A. D. Adair & McCarty Brothers	10.00
Sept. 1.	Hirsh, Stein & Co.	197.91
Sept. 1.	Tennessee Valley Fertilizer Co.	100.00
Sept. 1.	Louisville Fertilizer Co.	112.50
Sept. 3.	Bowker Fertilizer Co.	56.25
Sept. 5.	Armour Fertilizer Works	25.00
Sept. 5.	National Fertilizer Co.	10.00
Sept. 5.	Tennessee Chemical Co.	375.00
Sept. 5.	Read Phosphate Co.	500.00
Sept. 7.	Taylor and Powell	37.50
Sept. 7.	Morris & Co.	50.00
Sept. 7.	Armour Fertilizer Works	100.00
Sept. 7.	Virginia-Carolina Chemical Co.	100.00
Sept. 7.	National Fertilizer Co.	20.00
Sept. 8.	A. D. Adair & McCarty Brothers	50.00
Sept. 8.	Mt. Pleasant Fertilizer Co.	250.00
Sept. 9.	Hirsh, Stein & Co.	93.75
Sept. 9.	Southern Seed Co.	10.00
Sept. 12.	Armour Fertilizer Works	25.00
Sept. 12.	Duncan and Brother	20.00
Sept. 13.	Hopkins Fertilizer Co.	25.00
Sept. 13.	Mt. Pleasant Fertilizer Co.	10.00

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Sept. 14.	Federal Chemical Co.	$1,612.50
Sept. 15.	Armour Fertilizer Works	25.00
Sept. 16.	Louisville Fertilizer Co.	31.00
Sept. 17.	Tennessee Chemical Co.	10.00
Sept. 19.	Jarecki Chemical Co.	181.25
Sept. 21.	Tennessee Chemical Co.	550.00
Sept. 21.	Pero and Stoecker	50.00
Sept. 21.	A. D. Adair & McCarty Brothers	50.00
Sept. 21.	Armour Fertilizer Works	150.00
Sept. 21.	American Agrl. Chemical Co.	195.75
Sept. 21.	National Fertilizer Co.	100.00
Sept. 21.	Mt. Pleasant Fertilizer Co.	400.00
Sept. 21.	Taylor and Powell	40.00
Sept. 26.	Morris & Co.	50.00
Sept. 26.	Read Phosphate Co.	100.00
Sept. 26.	Evansville Packing Co.	37.50
Sept. 27.	National Fertilizer Co.	100.00
Sept. 27.	Swift & Co.	156.25
Sept. 28.	Read Phosphate Co.	250.00
Sept. 29.	Jarecki Chemical Co.	156.25
Sept. 29.	Morris & Co.	50.00
Sept. 30.	National Fertilizer Co.	50.00
Oct. 3.	Tennessee Chemical Co.	312.50
Oct. 3.	Read Phosphate Co.	100.00
Oct. 3.	Virginia-Carolina Chemical Co.	100.00
Oct. 4.	Armour Fertilizer Works	200.00
Oct. 5.	Grayson County Fertilizer Co.	5.00
Oct. 6.	Wood, Stubbs & Co.	15.00
Oct. 6.	Evansville Packing Co.	25.00
Oct. 6.	Hirsh, Stein & Co.	62.50
Oct 6.	Louisville Fertilizer Co.	250.00
Oct. 8.	Swift & Co.	156.25
Oct. 8.	Louisville Fertilizer Co.	10.00
Oct. 13.	German Kali Works	30.00
Oct. 13.	Meridian Fertilizer Co.	25.00
Oct. 14.	Morris & Co.	50.00
Oct. 14.	Pero and Stoecker	25.00
Oct. 17.	Duncan and Brother	10.00
Oct. 18.	Federal Chemical Co.	1,862.50
Oct. 21.	Grayson County Fertilizer Co.	5.00
Oct. 21.	Morris & Co.	100.00
Oct. 26.	American Agrl. Chemical Co.	135.25
Oct. 27.	Read Phosphate Co.	150.00
Nov. 19.	Jarecki Chemical Co.	62.50
Dec. 12.	C. S. Brent	5.00
Dec. 14.	Federal Chemical Co.	5.00

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Jan.	1.	Morris & Co.	$120.00
Jan.	1.	American Agrl. Chem. Co.	180.00
Jan.	1.	Bowker Fertilizer Works	130.00
Jan.	1.	Michigan Carbon Works	130.00
Jan.	1.	Northwestern Fertilizer Co.	170.00
Jan.	1.	Packers Fertilizer Association	120.00
Jan.	1.	Standard Guano and Chemical Mfg. Co.	10.00
Jan.	1.	Mt. Pleasant Fertilizer Co.	180.00
Jan.	1.	Great Southern Phosphate Co.	110.00
Jan.	2.	A. D. Adair & McCarty Brothers	50.00
Jan.	5.	Swift & Co.	170.00
Jan.	5.	Armour Fertilizer Works	190.00
Jan.	5.	Smith Brothers	130.00
Jan.	6.	Tuscarora Fertilizer Co.	110.00
Jan.	6.	National Fertilizer Co.	100.00
Jan.	16.	Read Phosphate Co.	280.00
Jan.	16.	Empire Guano Co.	190.00
Jan.	23.	Armour Fertilizer Works	50.00
Feb.	3.	American Agrl. Chemical Co.	25.00
Feb.	3.	Michigan Carbon Works	340.62
Feb.	3.	Northwestern Fertilizer Co.	12.50
Feb.	3.	Packers Fertilizer Association	50.00
Feb.	3.	Hirsh, Stein & Co.	60.00
Feb.	3.	Central Mfg. Co.	100.00
Feb.	6.	Armour Fertilizer Works	225.00
Feb.	6.	Swift & Co.	681.50
Feb.	6.	Evansville Packing Co.	120.00
Feb.	6.	Hirsh, Stein & Co.	120.00
Feb.	6.	Tennessee Chemical Co.	312.50
Feb.	8.	Armour Fertilizer Works	200.00
Feb.	10.	National Fertilizer Co.	50.00
Feb.	10.	P. B. Mathiason Mfg. Co.	20.00
Feb.	11.	German Kali Works	30.00
Feb.	13.	Tennessee Valley Fertilizer Co.	80.00
Feb.	13.	A. D. Adair & McCarty Brothers	70.00
Feb.	14.	Federal Chemical Co.	220.00
Feb.	14.	Fox Chemical Co.	250.00
Feb.	14.	Globe Fertilizer Co.	290.00
Feb.	14.	Kentucky Fertilizer Co.	170.00
Feb.	14.	Wood, Stubbs & Co.	50.00
Feb.	14.	Smith Brothers	25.00
Feb.	14.	The Groves Co.	130.00
Feb.	15.	Louisville Fertilizer Co.	170.00
Feb.	15.	Continental Fertilizer Co.	130.00
Feb.	15.	Tennessee Chemical Co.	160.00
Feb.	15.	Jones Fertilizer Co.	140.00
Feb.	15.	Tuscarora Fertilizer Co.	35.00

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Feb.	20.	P. B. Mathiason Mfg. Co.	$25.00
Feb.	20.	Virginia-Carolina Chemical Co.	90.00
Feb.	21.	Hopkins Fertilizer Co.	50.00
Feb.	27.	T. J. Turley Co.	60.00
Feb.	27.	Louisville Fertilizer Co.	20.00
Feb.	27.	Continental Fertilizer Co.	10.00
Feb.	27.	Tennessee Chemical Co.	10.00
Feb.	27.	Jones Fertilizer Co.	10.00
Feb.	28.	Central Mfg. Co.	220.00
Mar.	1.	Empire Guano Co.	5.00
Mar.	1.	Southern Seed Co.	60.00
Mar.	3.	Empire Guano Co.	5.00
Mar.	3.	Read Phosphate Co.	300.00
Mar.	6.	National Fertilizer Co.	20.00
Mar.	6.	Pero and Stoecker	50.00
Mar.	6.	Duncan & Brother	40.00
Mar.	8.	American Agrl. Chem. Co.	150.00
Mar.	8.	Bowker Fertilizer Works	381.25
Mar.	8.	Michigan Carbon Works	543.75
Mar.	8.	Northwestern Fertilizer Co.	256.25
Mar.	10.	Jarecki Chemical Co.	156.25
Mar.	13.	Taylor and Powell	62.50
Mar.	17.	Southern Seed Co.	10.00
Mar.	17.	Baugh & Sons Co.	15.00
Mar.	17.	Hopkins Fertilizer Co.	70.00
Mar.	24.	C. S. Brent	10.00
Mar.	27.	Read Phosphate Co.	125.00
Mar.	27.	Louisville Fertilizer Co.	275.00
Mar.	27.	Evansville Packing Co.	100.00
Mar.	29.	Michigan Carbon Works	520.75
Mar.	29.	Tennessee Chemical Co.	20.00
Mar.	30.	Swift & Co.	93.75
Apr.	1.	Swift & Co.	156.25
Apr.	6.	Read Phosphate Co.	300.00
Apr.	7.	American Agrl. Chemical Co.	375.00
Apr.	7.	Louisville Fertilizer Co.	250.00
Apr.	10.	Mt. Pleasant Fertilizer Co.	150.00
Apr.	13.	Smith Agrl. Chemical Co.	62.50
Apr.	14.	The Groves Co	100.00
Apr.	14.	Pero and Stoecker	25.00
Apr.	14.	Baugh & Sons	10.00
Apr.	14.	Federal Chemical Co.	1,062.50
Apr.	14.	Cincinnati Phosphate Co.	110.00
Apr.	14.	Kaufman Fertilizer Co.	100.00
Apr.	14.	Queen City Fertilizer Co.	50.00
Apr.	17.	Tennessee Chemical Co.	125.00
Apr.	17.	Smith Brothers	10.00

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Apr. 17.	Hirsh, Stein & Co.	$62.50
Apr. 17.	Grayson County Fertilizer Co.	10.00
Apr. 18.	Louisville Fertilizer Co.	122.00
Apr. 18.	Taylor and Powell	40.00
Apr. 19.	Tennessee Chemical Co.	312.50
Apr. 22.	American Agrl. Chemical Co.	391.50
Apr. 22.	Bowker Fertilizer Works	245.75
Apr. 22.	Michigan Carbon Works	187.50
Apr. 22.	Northwestern Fertilizing Co.	25.00
Apr. 25.	Hopkins Fertilizer Co.	50.00
Apr. 26.	Blood and Bone Fertilizer Co.	10.00
Apr. 27.	Northwestern Fertilizing Co.	40.50
Apr. 27.	Duncan and Brother	20.00
Apr. 27.	Evansville Packing Co.	25.00
May 2.	Louisville Fertilizer Co.	200.00
May 2.	Geo. A. Bell Fertilizer Works	10.00
May 4.	Grayson County Fertilizer Co.	5.00
May 5.	National Fertilizer Co.	100.00
May 8.	Read Phosphate Co.	100.00
May 9.	Louisville Fertilizer Co.	200.00
May 10.	American Agrl. Chemical Co.	93.75
May 11.	Federal Chemical Co.	3,737.50
May 12.	C. S. Brent	22.50
May 16.	National Fertilizer Co.	10.00
May 16.	Jarecki Chemical Co.	312.50
May 16.	Grayson County Fertilizer Co.	5.00
May 17.	Nitrate Agencies Co.	10.00
May 19.	Michigan Carbon Works	175.00
May 19.	Tennessee Chemical Co.	281.25
May 20.	National Fertilizer Co.	125.00
May 22.	Duncan and Brother	10.00
May 23.	Southern Seed Co.	25.00
May 26.	Bowker Fertilizer Works	112.50
May 26.	Michigan Carbon Works	75.00
May 29.	Evansville Packing Co.	25.00
June 9.	American Agricultural Chemical Co.	112.50
June 10.	Federal Chemical Co.	206.25
June 15.	Jarecki Chemical Co.	156.25
June 16.	Jones Fertilizer Co.	10.00
June 22.	Hirsh, Stein & Co.	10.00

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ITEMIZED STATEMENT OF EXPENDITURES UNDER THE FERTILIZER LAW FROM JULY 1, 1910 TO JUNE 30, 1911.

July	1.	B. D. Wilson, Work—June	$52.00
July	6.	H. Garman, Trav. Exp.	9.85
July	6.	Ed. Kinney, Trav. Exp.	8.55
July	6.	C. H. Scherffius, Works—Plots	28.23
July	6.	Welsh & Murray, Env. and Prtg. Tags	210.17
July	22.	Jasper Pratt, Work—Hindman Plots	36.10
July	25.	The Robert Clark Co., Book	1.75
July	25.	M. A. Scovell, Dir., Exp. Adv.	6.55
July	25.	J. M. Hanson, Subscription	1.65
July	25.	Ware Bros. Co., Book	3.00
July	25.	Kny-Scheerer Co., Subs.	12.20
July	30.	H. E. Curtis, Sal.—July	200.00
July	30.	Geo. Roberts, Sal.—July	88.33
July	30.	E. F. Worthington, Sal.—July	62.50
July	30.	T. R. Bryant, Sal.—July	54.17
July	30.	D. C. Frazee, Sal.—July	25.00
July	30.	B. D. Wilson, Sal.—July	75.00
Aug.	9.	Welsh & Murray, Prtg. Tags	79.56
Aug.	9.	Jasper Pratt, Work—Hindman Plots	33.30
Aug.	23.	C. H. Scherffius, Wages—July and Exp.	36.99
Aug.	27.	M. A. Scovell, Dir., Exp. Adv.	4.35
Aug.	27.	H. Woosley, Exp. Plot Work	100.20
Aug.	27.	Stoll & Co., Alcohol	32.69
Aug.	27.	Jas. E. Hughes, Prtg.	16.00
Aug.	27.	Wood, Stubbs & Co., Seed, etc.	12.20
Aug.	27.	Reyburn Mfg. Co., Tags	175.00
Aug.	31.	H. E. Curtis, Sal.—Aug.	200.00
Aug.	31.	Geo. Roberts, Sal.—Aug.	83.33
Aug.	31.	Anna Wallis, Sal.—Aug.	60.00
Aug.	31.	E. F. Worthington, Sal.—Aug.	62.50
Aug.	31.	T. R. Bryant, Sal.—Aug.	54.17
Aug.	31.	B. D. Wilson, Sal.—Aug.	75.00
Sept.	1.	M. A. Scovell, Dir., Payroll—Farm	912.83
Sept.	7.	Lexington Utilities Co., Light	13.32
Sept.	7.	Central Ky. Nat. Gas Co., Gas	10.50
Sept.	7.	Welsh & Murray, Prtg. Tags	64.86
Sept.	7.	C. H. Scherffius, Wages—Aug.	25.00
Sept.	14.	Jasper Pratt, Work—Plots, Hindman	35.65
Sept.	27.	The Robert Clark Co., Books	15.75
Sept.	27.	M. A. Scovell, Dir., Exp. Adv.	22.20
Sept.	27.	Anderson and Frankel, Plans, etc.—Barns	61.10

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Sept. 27.	Welsh & Murray, Prtg. Bul. 146	$823.20
Sept. 27.	Lexington H. & M. Co., Water	31.07
Sept. 27.	Jas. E. Hughes, Prtg. Stamps	20.00
Sept. 27.	Combs Lumber Co., Bldg. Barn	1,222.00
Sept. 30.	H. E. Curtis, Sal.—Sept.	200.00
Sept. 30.	Geo. Roberts, Sal.—Sept.	83.34
Sept. 30.	E. F. Worthington, Sal.—Sept.	62.50
Sept. 30.	T. R. Bryant, Sal.—Sept.	54.16
Sept. 30.	D. C. Frazee, Sal.—Sept.	25.00
Sept. 30	B. D. Wilson, Sal.—Sept.	75.00
Sept. 30.	A. E. Ewan, Sal.—Sept.	50.00
Oct. 1.	Security Trust Co., Payment last Note and interest Kinkead Farm	5,250.00
Oct. 1.	M. A. Scovell, Dir., Payroll—Farm	665.27
Oct. 3.	C. H. Scherffius, Wages and Exp.	39.32
Oct. 10.	John I. Claybrooke, Insp.	102.17
Oct. 14.	Welsh & Murray, Prtg. Tags	81.93
Oct. 14.	Jasper Pratt, Work—Hindman Plots	32.50
Oct. 22.	J. M. Hanson, Subs.	5.30
Oct. 22.	M. A. Scovell, Dir., Exp. Adv.	6.85
Oct. 22.	Jas. E. Hughes, Prtg	12.00
Oct. 22.	E. Tenn. Tel. Co., Rentals—Oct., Nov., Dec.	18.00
Oct. 22.	John I. Claybrooke, Insp.	122.60
Oct. 31.	H. E. Curtis, Sal.—Oct.	200.00
Oct. 31.	J. W. Nutter, Sal.—Oct.	108.33
Oct. 31.	Geo. Roberts, Sal.—Oct.	83.33
Oct. 31.	Anna Wallis, Sal.—Oct.	60.00
Oct. 31.	T. R. Bryant, Sal.—Oct.	54.17
Oct. 31.	B. D. Wilson, Sal.—Oct.	75.00
Oct. 31.	A. E. Ewan, Sal.—Oct.	50.00
Nov. 1.	M. A. Scovell, Dir., Payroll—Farm	661.30
Nov. 2.	John I. Claybrooke, Insp.	101.40
Nov. 3.	C. H. Scherffius, Exp. wk. Hardinsburg	40.32
Nov. 3.	Welsh & Murray Prtg. Tags—Oct	10.34
Nov. 8.	T. R. Bryant, Trav. Exp.	38.65
Nov. 10.	C. H. Scherffius, Work—Oct.	12.00
Nov. 10.	Jas. Dicker, Pipe and Repairs	14.00
Nov. 10.	John Everidge, Rent. Land Hindman	36.00
Nov. 10.	Jasper Pratt, Work—Plots, Hindman	32.50
Nov. 29.	M. A. Scovell, Dir., Exp. Adv.	10.05
Nov. 29.	O. M. Shedd, Exp. Washington	49.85
Nov. 29.	T. R. Bryant, Exp. Washington	50.71
Nov. 29.	Fayette Home Tel. Co., Rentals, Oct., Nov., Dec.	15.75
Nov. 30.	H. E. Curtis, Sal. —Nov.	200.00
Nov. 30.	Geo. Roberts, Sal.—Nov.	83.33
Nov. 30.	T. R. Bryant, Sal.—Nov.	54.17

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Nov.	30.	B. D. Wilson, Sal.—Nov.	$75.00
Nov.	30.	A. E. Ewan, Sal.—Nov.	50.00
Nov.	30.	Wm. Rodes, Sal.—Nov.	100.00
Dec.	16.	H. J. Krum, Sub.	2.50
Dec.	16.	Eimer and Amend, App. and Chems.	87.21
Dec.	31.	M. A. Scovell, Sal.—Dec.	350.00
Dec.	31.	H. E. Curtis, Sal.—Dec.	200.00
Dec.	31.	Geo. Roberts, Sal.—Dec.	83.34
Dec.	31.	Anna Wallis, Sal.—Dec.	60.00
Dec.	31.	T. R. Bryant, Sal.—Dec.	54.16
Dec.	31.	B. D. Wilson, Sal.—Dec.	75.00
Dec.	31.	A. E. Ewan, Sal.—Dec.	50.00
Dec.	31.	Wm. Rodes, Sal.—Dec.	100.00
Jan.	4.	M. A. Scovell, Dir., Payroll—Dec.	601.79
Jan.	7.	Central Kentucky Nat. Gas. Co., Gas	13.56
Jan.	7.	Lexington Utilities Co., Light	27.35
Jan.	7.	Kinkead Coal Co., Coal	115.41
Jan.	7.	Lexington H. & M. Co., Water	38.51
Jan.	7.	Taylor Beard, Bal. Rent, 1910 (½)	44.15
Jan.	10.	H. W. Wiley, Secy.-Treas., Dues A. O. A. C.	2.00
Jan.	20.	Denison Mfg. Co., 1 million tags	330.00
Jan.	31.	H. E. Curtis, Sal.—Jan.	200.00
Jan.	31.	Geo. Roberts, Sal.—Jan.	83.33
Jan.	31.	T. R. Bryant, Sal.—Jan.	54.17
Jan.	31.	B. D. Wilson, Sal.—Jan.	75.00
Jan.	31.	A. E. Ewan, Sal.—Jan.	50.00
Jan.	31.	Wm. Rodes, Sal.—Jan.	100.00
Jan.	31.	Robt. Graham, Sal.—Jan.	70.96
Feb.	1.	M. A. Scovell, Dir., Payroll, Farm	658.77
Feb.	8.	Geo. Roberts, Trav. Exp.	28.40
Feb.	8.	H. Woosley, Exp. Hardinsburg	101.87
Feb.	8.	Welsh & Murray, Prtg. Tags	87.47
Feb.	21.	Dennison Mfg. Co., Labels and Fasteners	487.10
Feb.	25.	National Geog. Society, Subscription	2.00
Feb.	25.	M. A. Scovell, Dir., Exp. Adv.	53.55
Feb.	25.	T. R. Bryant, Trav. Exp.	38.60
Feb.	25.	Eimer and Amend, App., etc.	12.75
Feb.	28.	H. E. Curtis, Sal.—Feb.	200.00
Feb.	28.	J. W. Nutter, Sal.—Feb.	108.33
Feb.	28.	Geo. Roberts, Sal.—Feb.	83.33
Feb.	28.	Anna Wallis, Sal.—Feb.	60.00
Feb.	28.	T. R. Bryant, Sal.—Feb.	54.17
Feb.	28.	B. D. Wilson, Sal.—Feb.	75.00
Feb.	28.	A. E. Ewan, Sal.—Feb.	50.00
Feb.	28.	Wm. Rodes, Sal.—Feb.	100.00
Feb.	28.	Robert Graham, Sal.—Feb.	100.00

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Mar. 9.	Geo. Roberts, Trav. Exp.	$28.25
Mar. 9.	C. W. Matthews, Trav. Exp.	21.85
Mar. 23.	Dennison Mfg. Co., Tags	330.00
Mar. 27.	The Robt. Clark Co., Books	8.00
Mar. 27.	M. A. Scovell, Dir., Exp. Adv.	6.67
Mar. 31.	H. E. Curtis, Sal.—Mar.	200.00
Mar. 31.	Geo. Roberts, Sal.—Mar.	83.34
Mar. 31.	T. R. Bryant, Sal.—Mar.	54.16
Mar. 31.	B. D. Wilson, Sal.—Mar.	75.00
Mar. 31.	A. E. Ewan, Sal.—Mar.	50.00
Mar. 31.	Wm. Rodes, Sal.—Mar.	100.00
Mar. 31.	Robt. Graham, Sal.—Mar.	100.00
Apr. 8.	Welsh & Murray Prtg. Co., Prtg. Tags	204.54
Apr. 20.	C. H. Scherffius, Insp.	44.95
Apr. 27.	J. M. Hanson, Subscriptions	20.55
Apr. 27.	M. A. Scovell, Dir., Exp. Adv.	70.63
Apr. 27.	John I. Claybrooke, Insp.	124.50
Apr. 27.	C. F. Brower & Co., Chair and Cards	16.25
Apr. 27.	Smith Premier Co., Typewriter	81.00
Apr. 29.	H. E. Curtis, Sal.—Apr.	200.00
Apr. 29.	Geo. Roberts, Sal.—Apr.	83.33
Apr. 29.	Anna Wallis, Sal.—Apr.	60.00
Apr. 29.	T. R. Bryant, Sal.—Apr.	54.17
Apr. 29.	B. D. Wilson, Sal.—Apr.	75.00
Apr. 29.	A. E. Ewan, Sal.—Apr.	50.00
Apr. 29.	Wm. Rodes, Sal.—Apr.	100.00
Apr. 29.	Robert Graham, Sal.—Apr.	100.00
May 2.	A. H. Darnell, Work—London Exp.	16.30
May 2.	Hoskins & Dyche, Dynamite	10.00
May 2.	Edwards & Sparks, Lime	6.00
May 6.	Welsh & Murray, Prtg. Tags—April	48.81
May 6.	John I. Claybrooke, Insp.	90.90
May 6.	C. H. Scherffius, Insp.	67.04
May 10.	H. Garman, Trav. Exp.	17.20
May 10.	E. C. Vaugh, Trav. Exp.	2.40
May 10.	Geo. Roberts, Trav. Exp.	32.56
May 10.	Central Kentucky Nat. Gas. Co., Gas	14.70
May 10.	Lexington Utilities Co., Light	14.76
May 10.	Lexington H. & M. Co., Water	29.23
May 10.	Kinkead Coal Co., Coal	19.68
May 23.	John I. Claybrooke, Insp.	69.70
May 23.	C. H. Scherffius, Insp.	71.55
May 23.	John Dicker, Making Case	9.50
May 23.	Globe Fertilizer Co., Ton Acid Phosphate	16.00
May 23.	Jasper Pratt, Work—Hindman	42.80
May 25.	M. A. Scovell, Dir., Exp. Adv.	12.87

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May 25.	Transylvania Prtg. Co., Prtg. Bul. 153, etc.	$168.95
May 25.	Combs Lumber Co., Repairs, Coops, etc.	308.95
May 25.	L. Descognets & Co., Lime	5.00
May 25.	Piggs and Mullen, 4 loads manure	8.00
May 31.	H. E. Curtis, Sal.—May	200.00
May 31.	Geo. Roberts, Sal.—May	83.33
May 31.	Anna Wallis, Sal.—May	60.00
May 31.	T. R. Bryant, Sal.—May	54.17
May 31.	B. D. Wilson, Sal.—May	75.00
May 31.	A. E. Ewan, Sal.—May	50.00
May 31.	Wm. Rodes, Sal.—May	100.00
May 31.	Robert Graham, Sal.—May	100.00
June 9.	Geo. Roberts, Trav. Exp.	17.85
June 9.	Welsh & Murray, Ptrg. Tags	10.92
June 9.	C. H. Scherffius, Insp.	40.90
June 9.	Jasper Pratt, Work—Hindman Exp.	37.75
June 27.	M. A. Scovell, Dir., Exp. Adv.	6.65
June 27.	S. C. Routt, Testing Cows	8.14
June 27.	T. R. Bryant, Trav. Exp.	16.00
June 30.	H. E. Curtis, Sal.—June	200.00
June 30.	S. D. Averitt, Sal.—June	141.66
June 30.	O. M. Shedd, Sal.—June	133.34
June 30.	J. W. Nutter, Sal.—June	108.34
June 30.	Geo. Roberts, Sal.—June	83.34
June 30.	Anna Wallis, Sal.—June	60.00
June 30.	T. R. Bryant, Sal.—June	54.16
June 30.	B. D. Wilson, Sal.—June	75.00
June 30.	A. E. Ewan, Sal.—June	50.00
June 30.	Wm. Rodes, Sal.—June	100.00
June 30.	Robert Graham, Sal.—June	100.00
June 30.	M. A. Scovell, Payroll—June	751.63

SUMMARY STATEMENT.

JULY 1, 1910 TO JUNE 30, 1911.

Balance on hand July 1, 1910	$ 7,320.35	
Receipts July 1, 1910 to June 30, 1911	34,787.37	$42,107.72

Expenditures July 1, 1910 to June 30, 1911.

Salaries	$ 8,480.46
Labor	4,700.35
Publicatons	982.95
Printing tags	2,229.84
Postage and Stationery	240.30
Freight and Express	171.77
Heat, Light, Water	328.09

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Chemical Supplies	$125.55	
Seed plants and sundry supplies	42.60	
Fertilizers	29.00	
Library	60.50	
Furniture	99.25	
Scientific Apparatus	7.10	
Traveling Expenses	570.93	
Inspecting	835.71	
Contingent	82.15	
Building and land	6,856.05	$25,849.60
Balance on hand July 1, 1911		$16,258.12

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REPORT

OF THE

Kentucky State Horticultural Society

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REPORT

OF THE

Kentucky State Horticultural Society

The annual meeting of the Kentucky State Horticultural Society convened in the Assembly Room of the Louisville Free Public Library at 10 a. m. January 10, 1911.

The meeting was called to order by President M. F. Johnson, of Buechel, Kentucky, who invited Rev. E. McCollom, of Henderson County, to open the exercises with prayer. An address of welcome was delivered by M. W. Neal, of Louisville, with a response by Hon. Wm. Cook, of Bowling Green, Ky. Owing to the absence of the Secretary, Mr. Raymond Button, Mr. J. C. Hawes, of Jefferson County, was appointed temporary secretary.

President Johnson then read his annual address in part as follows:

"There are three things to which the society should give its hearty indorsement. They are, teaching of agriculture in our common schools, good roads, and a better and more thorough warfare upon orchard pests.

"'First—Ninety per cent. of our country boys will remain on the farm if given a chance to do so. The population of the cities is increasing much more rapidly than is the population of the rural sections, yet these rural boys must produce the food for all, and every shred of clothing must be made either from the lint of the farmer's plants or from the fleece of his flock. The practical education of the farmer boy so as to fit him to intelligently deal with farm economies is one of the most important things for the development of our State today.

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"Second—Good roads will benefit no class of people more than the fruit grower. To the fruit grower good and smooth roads are indispensable in order that he may get his products into the markets in the quickest possible time and in the best possible condition. In many sections of the State with good roads the fruit grower could dispose of his products among those farmers who do not grow fruit. Eastern Kentucky is rich in horticultural possibilities as well as minerals. New railroads from various sections are penetrating these rich mineral sections and in the near future many non-producing laborers will people the eastern part of the State. The finest specimens of Rome Beauty, York Imperial, and Yellow Transparent apples I have ever seen. grew in the mountains of Eastern Kentucky. There is a fortune for some men with means in commercial apple growing in such counties as Morgan, McGoffin, Johnson and Lawrence.

"Third—This society must preach the gospel not only of destruction of scales, codling moth and such like, but also the gospel of protection to those who do care for their trees and plants. What does it avail from a sanitary standpoint for one man in the city to clean up and observe sanitary regulations if those on all sides of him are permitted to continue in filth? The only reason that Western fruits seem superior to our home grown is that their orchards and fruits are protected from the ravages of insects. In several Western States they have compulsory spraying laws, which provide for inspectors, and when a man will not spray his own trees, and thereby jeopardizes his neighbor's orchards, the State sprays his orchard and compels him to pay for it. It may be considered radical, but I think such a law would be a blessing to Kentucky. No man has a right to maintain a nuisance in any community. Western Kentucky can beat the world raising the Wine-sap type of apple; Bullitt and Trimble counties have demonstrated that the Kentucky peach is equal to the best, and Warren, Hickman and Jefferson are all there with the goods when it comes to the small fruits."

In connection with this address President Johnson expressed his determination to resign as president. Having served as president for fifteen years and not being at present directly engaged in fruit growing, he believed that the pur-

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poses of the organization would best be served by some one else.

The society was next addressed by Mr. L. B. Shropshire, Assistant Secretary of the Kentucky State Fair, who spoke upon the topic, "How Can the State Fair Help Us?" After this address, the society adjourned to meet at 1:30 p. m.

Following the recess, the society convened at 1:30, and with President Johnson in the chair, proceeded with the program as follows:

THE POSSIBILITIES OF COMMERCIAL ORCHARDING IN KENTUCKY.

REV. E. McCULLOM, Henderson County.

The subject assigned me, "The Possibilities of Commercial Orcharding in Kentucky," is one upon which I hardly feel competent to speak, because of my limited acquaintance with the State, having lived in it only fifteen years.

Then again, in speaking from the limited knowledge that I have, there is a point to be guarded, that is the natural tendency to be so biased in favor of your home land as to be unable to see its defects or the good beyond its boundary.

Although Kentucky did not furnish me a place in which to be born she has given me a beautiful home in which to live, and I love it so well that there I expect to die and I hope Kentucky will furnish me a place in which to be buried. The luring descriptions of the marvelous accomplishments in fruit growing in the great Northwest excited in me a desire to move to the land of the setting sun and "the big red apple." But after two years of careful investigation from every available source I am settled in this conviction—Kentucky is my home and the possibilities of fruit growing are as great as in any State in the Union. I make no exceptions.

A careful comparison of the fruit grown in Kentucky with the fruit of the great Northwest proves that they excel us in only one point—color. The almost continual sunshine gives their fruit a brighter color, making it more attractive to look at, but when you come to the supreme test, "the eating of the pudding," Kentucky flavor excels beyond compare.

The only question in my mind is, can we get the MEN in Kentucky to measure up to her possibilities? To accom-

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plish this will require a vigorous compaign of education. To lay a proper foundation we must lift our eyes beyond the dollars to be gathered from our trees. He who looks only for dollars will get discouraged when the testing time comes, as it surely will. We must first consider the necessity for commercial orcharding.

There is no question that the all-wise Creator designed this earth for the home of the being that he would create in his own image. We find that its composition is a store house for every element necessary for man's highest development and supreme happiness. Philosophers tell us that the simple elements are very few in number, but that the variety of their combinations is beyond human computation.

Beneath us is stored up not only the precious gems and metals, but in a coarser vein the concentrated energy of millions of years of sunshine to furnish us light, heat and power. Above us floats a sea of ether upon whose waves are borne our messages over mountain and plain and across the sea. In the soil upon the surface and the atmosphere which surrounds it are stored all those elements which combine to supply in endless variety all the sweet perfume and beauty and harmony necessary to satisfy to the full every sense with which man is endowed. And of all this endless variety there is no one that goes further towards making up the sum of man's physical well-being than that to be found in fruit. So high a place does it hold in the divine economy that in the Holy Scriptures it is used as a symbol of man's highest good: "To him that overcometh will I give to eat of the tree of life that is in the midst of the paradise of God." And this tree is said to bear twelve manner of fruit and yields her fruit every month and the leaves of the tree are for the healing of nations.

Men are coming to know as they have never known before that fruit is something more than a mere luxury, that it is a very important article of food and that as a health preserver it has no equal. Physicians are learning that the use of the apple is one of the best cures for that curse of all curses—alcoholism. People generally are being so educated to its value as an article of diet and the demand is increasing to such an extent that today there is not enough produced to supply the needs of our home people, consequently the prices are so high as to place it beyond the reach of the great mass.

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Dealers tell me that never has so large a percentage of the crop gone into consumption at this time of the year. The trade journals tell us that on the first day of January the visible supply for the United States and Canada was about 4,000,000 barrels. The last census gives the population of the United States at about 100,000,000. That gives only one barrel of apples for every twenty-five people, and if you allow 600 apples to the barrel you will have only 24 apples for each person in the United States. Not enough to last one month if each person were to eat one apple per day, as some one has suggested. Another fact to be considered is that in all this vast country there is only a small percentage of it where the apple can be successfully and profitably grown.

Then it is considered a pretty safe prediction that at the present rate of increase it will not be many decades until the population of our country will number 200,000,000. From all these considerations it is clearly to be seen that to supply the increasing demand of this rapidly increasing population will tax our limited producing territory to its very utmost, leaving nothing for export to those countries that must look to us for a supply. There is another fact not to be lost sight of, and that is that the day of the family orchard is rapidly passing. The difficulties are so great and the enemies to be fought so many that the ordinary farmer whose time is taken up with other crops either cannot or will not bear the expense nor take the pains necessary to success, therefore the family orchard will soon be a thing of the past. Here appears the necessity for commercial orcharding.

We must say to those who are in possession of the territory where the apple can be successfully and profitably grown, "It is a duty you owe to your country and your fellow beings that you qualify yourself and devote your attention to the production of that article of food which is so helpful in the highest development of your race." You are ready to ask, do these conditions apply to Kentucky? I unhesitatingly reply, yes. We have the climate and the soil that will successfully and profitably produce as high quality of apples as can be produced in the world. As much as I dislike to speak of myself, I will give you a little of my own experience to back up what has been said.

I came to Henderson County, Kentucky, fifteen years ago in poor health and utterly ignorant of the very first principles

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of fruit growing, not knowing how to buy land, to care for trees, nor how to market the fruit after it was gathered. We bought a farm of eighty-six acres. On it was an old orchard of 60 trees and between thirty to forty acres planted with trees that were about two years old. The first thing done in my ignorance was to chop down six hundred of these young trees, thinking I needed more land to grow corn.

The first year those 60 old trees made us about $600, which helped along nicely. We went on caring for the young trees the best we knew how until they were about seven years old when they gave us a crop of about 2,000 bushels of as fine apples (Winesaps and Ben Davis) as ever grew, but we did not make much out of them. A fellow came along and bought them for about $1.40 per barrel, he selling them for $5.00, making the easy money.

The next year we had a large crop of the most scabby, knotty, wormy apples you ever saw, scarcely a merchantable apple in the lot. Our attention was then directed to spraying and we began to read up and bought a spray pump. We sprayed well the next year and raised a fine crop of apples. By this time we had cut our eye teeth and began to look for some of the easy money, getting as high as $5.50 for our best Winesaps. We began to think it payed to spray and did the work better.

The next year one of our good Louisville men came down and paid us in a lump sum for the apples on the culling table one-half the price we paid for the whole farm, he furnishing his own barrels and doing the packing. The next year came the big snow on the 20th of April and knocked us out. We had only 300 bushels that year. And here we made another great mistake. When the snow came and killed the fruit we thought it no use to spray any more and stopped. That gave the scab such a start that the next year our apples were very scabby but free from worms. That taught us the lesson, *spray whether you have any fruit or not.* You may be sure we sprayed next year and sold the crop for more money than we paid for the whole farm. The next was a good paying crop, but not so heavy as the previous one, but the following one made up for it when we sold the crop from twenty acres for twice as much as we paid for the whole 86 acres. The present crop is not sold yet, but it is a good one and from present prospects will bring me something handsome. Now

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all this in the face of the fact that my orchard has not been one-half cared for. I was too ignorant, did not know how. As wonderful as some people think my success has been I am confident that had I known how in the beginning I could have doubled what I have done. And what is more, my orchard would be in better shape for future production than it now is. It has suffered, will be shorter lived and less productive on account of the improper treatment it has received on account of my ignorance.

Yes, commercial orcharding can be made a success in Kentucky, and Henderson County can be made to beat them all. If the men of Henderson County will only measure up to her possibilities, what Yakima is to Washington, what Hood River is to Oregon, what Grand Valley is to Colorado, Henderson County will be to Kentucky.

Before closing, there is one more fact that I wish to make prominent. During these fifteen years there has been only one crop failure, the year of the snow. The old trees spoken of bore every year, and after the young trees began to bear, had I known how to take care of them, there would have been a big paying crop every year except that one, and that one was not a total failure.

THE GRAPE IN KENTUCKY.

PROFESSOR W. O. CROSS, Louisville, Ky.

Four species of grapes are natives of Kentucky. They are the Vitis lobrusca, or large Fox grape, probably extinct within the State in its mild form; the V. bicolor, or Summer grape, of the Aestivalis group; the V. vulpina, or River Bank grape, formerly called V. riparia; and the V. cordifolia, or frost grape.

The V. labrusca is represented in cultivation by the Concord and its seedlings, and by the Catawba, Perkins, Lutie and many others. The bicolor has contributed but one variety to our vineyards, but the Aestivalis, a closely related species, has given us Norton's Virginia, Cynthiana and Kentucky. To the vulpina we owe the Elvira, Noah and Grein's Golden. The cordifolia has no representatives in cultivation, though doubtless it is capable of improvement. The vinifera species, which gives us the fine bunches we see from hot houses and from California, does not succeed in Kentucky,

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but by hybridization with American kinds most valuable results have been obtained. In this way have originated the Amber Queen, Brighton, Brilliant, Campbell's Eearly, Delaware, and the Rogers' Hybrids, most of them excellent varieties.

The V. lincecumii, or Post Oak grape of the Southwest, also belonging to the aestivalis group, succeeds in its pure and hybrid forms in this State, and may be grown wherever the Summer grape flourishes. This grape has been wonderfully developed by Prof. T. V. Muson, of Denison, Texas, and the late Herman Jaeger, of Neosho, Mo. The late John Sacksteder, of Leavenworth, Ind., also bred a number of pure seedlings and crosses of genuine merit from this species, none of which, I believe, have been introduced to the public. In the linececumii class are found Jaeger's 43, and Munson's Beacon, America, Dr. Collier, Bailey, Carman, Armalaga and others.

To have good grapes in abundance, the one thing necessary is to give "intelligent attention" to their culture. The same general ideas of planting that govern other forms of fruit trees and shrubs apply to the grape. They should be set where they will get plenty of sun, with exposure from southeast to southwest, and so placed that the sun may shine on both sides of the vine during the day. They should be planted from 8 to 12 feet apart, according to habit and vigor, and if in rows, these should be 9 feet apart. (I follow Munson.) Vines may be pruned at any time after they are entirely dormant until near spring. Prune in November or February, they will tell you; some prefer one season and some another, but it must not be done when the vines are frozen, nor must it be done, we are told, later than a week before the sap rises; so to be safe, I prune in the fall or early winter.

The soil about vines should be kept loose during the growing season, but deep plowing must be avoided after the roots have grown to any considerable length. Most soils are rich enough for grapes during the first few years, cultivation only being required; but the grape, like other plants, needs three kinds of food and these it must have, namely, nitrogen, phosphoric acid, and potash, and when these become exhausted they must be supplied. Stable manure will give nitrogen and humus, but this should be applied in the fall, ac-

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cording to the late Mr. Sacksteder, and then only every other year. Phosphoric acid may be applied in the form of superphosphate, or of bone meal in cases where lime is not in excess. Muriate of potash is preferred and kainite is said to be a desirable form. Wood ashes applied in the fall are excellent, and when general fertilizing is indicated, a complete artificial fertilizer will be found satisfactory.

As a protection from insects and fungi, spraying may be necessary, but with a limited number of vines the fruit may be protected by sacking the clusters, using one or two pound grocers' sacks according to the size of the bunch. This should be done as soon as the cluster is large enough to permit the sack to be folded and pinned around its stem. If done in time this is an effectual protection, not only from birds, insects, and dirt, but from the rot as well.

The subject of varieties is an endless one, but any nurseryman will be glad to assist and advise with you on that point, and if he is responsible it will be well to allow him to do so, for he will know what varieties do well in your locality. It may also be taken for granted that what succeeds with your neighbor will succeed with you, provided always that you give it similar treatment.

For information about the grape, its natural history, propagation, culture and varieties, I would recommend, if in print, the Bushberg Catalogue, published by Bush & Son, Bushberg, Jefferson County, Mo.; American Grape Growing and Wine Making, by Prof. Geo. Husmann, and especially, Foundations of American Grape Culture, by Prof. T. V. Munson, Denison, Texas. For one desiring special and general knowledge of this subject, this, it seems to me, leaves nothing further to be desired.

WHY FRUIT AND FLOWERS SHOULD GO HAND-IN-HAND.

MRS. J. M. GARRETT, Woodford County.

From time immemorial fruit and flowers have been associated together. They necessarily go hand-in-hand, the one the cause, the other the sequence. When the Creator had finished his work his next thought was a garden wherein he put man whom he had formed.

In the literature of all ages, these tokens of the earth, springing from a common source, are linked together. In

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mythology Silvanus is represented as holding in one hand the pruning knife, while with the other he scatters flowers. Ainalthea's Horn of Plenty was filled with fruit and flowers.

In the highest expressions of art; in architecture of every period and type, ancient, mediaeval and modern, memorial, civil, religious; in marble and in mosaic, we find them associated. In the carved work of Solomon's temple the knop and the open flower; in his own house, the lily and the pomegranate. Their lines of grace, beauty, symmetry or even ruggedness, their exquisite tints or harmonious blending of color and shade, have ever furnished material for the artist's chisel or brush.

In our own everyday life, how often they go hand-in-hand. Our love or sympathy for others is expressed by gifts of fruit and flowers—to make the hours less tedious for a suffering one—to divert for the moment some broken heart—to add to the enjoyment of a festal occasion. Equally pleasing are they to old and young.

From a commercial standpoint these two branches of horticulture, when followed for a livelihood, are usually considered separately. This is a day of specializing. The florist caters to one trade, the grower of fruit to another. For the most part the requirements in handling are not the same. Different conditions for cultivation are demanded by each; the same ground occupied by an apple or peach tree will nurture several hundred plants of flowers. The orchardist is a country man, the florist's field of work in or approximate to the city. The orchardist supplies the needs of man; the florist's products are listed with his luxuries.

There is, however, a middle ground in which the two branches are combined as a business. Nursery stock and a long list of hardy flowers can be grown under similar conditions and treatment on the same character of soil, handled with the same tools, the horse and the plow and "the man with a hoe." The present strong demand for the products of such an establishment accounts for the increasing amount of capital invested in this way.

The subject assigned is: "Why Should Fruits and Flowers Go Hand-in-Hand?" Thus far I have endeavored to show that they do go thus. I wish now to speak of the one place where too often they are wanting altogether or exist separately—the country homes in Kentucky.

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In the Blue Grass it is the exception rather than the rule where the table of the farm home is supplied with fruits from that particular farm, or where more than one vase is needed to hold the blossoms cut from the lawn or garden, whereas every home should in both respects be an independent establishment. The opinion current among these householders is that too much expense, time and labor are requisite to make it practicable for the average farm to maintain these so-called luxuries, and luxuries they are in that they delight the human sense of beauty or satisfy a fastidious appetite--but not as an extravagant indulgence. If nature with a free hand has supplied the soil a complete fertilizer, perfect air drainage, a reasonable amount of moisture, and has, for us, actually sown the seed, shall we then express our appreciation of these gifts by allowing weeds to have supremacy on the lawn? Barring even the lawn mower, what passer-by would fail to note the attractiveness of a clean, unshaven, unplanted lawn of blue grass? As to expense of planting a lawn, most satisfactory results, for a nominal outlay, are possible, unless immediate effect is desired. Watching the development of small plants as they gradually show their individual habits of growth is not the least enjoyment one derives from the possession of them. I maintain that expense is not a real factor, but that a genuine interest in having beautiful home grounds is the prime factor.

The growing of small fruits, as raspberries and strawberries, for the home table has been largely cut out of the process of gardening from the fact that after the worry and cost of planting they have failed to fruit but scantily the following season, the consequence of having been taken by weeds, when in truth the necessary cost to have had them in abundance was often less by half the amount actually paid for table fruit, and that picked overnight. The refuse straw on the average farm, bedded 18 inches deep between the raspberry rows, at a time of the year when there is no rush of work on the farm, will settle the weed question for that season and preserve sufficient moisture to ripen the berries in case of a drought. Then that ogre, the spray pump, that causes many a home owner to exclude any nursery stock, is in reality only a farming implement, no more costly than a disk harrow. The spraying material comes to you in neat,

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convenient packages. It is just a case of "you press the button, it will do the rest."

If J. H. Hale can spray 2,000 acres per year, surely we can spray 25 or 100 trees—and scarcely miss the time, more especially when we consider what it means to have all these good things in our homes or how it deepens the home life and makes home dearer to our boys and girls. If with pride we tell of the luscious fruit our fathers grew, and can make it possible for our children to have the same precious memory, then the responsibility is ours. In the country home or any home wherever practicable, let fruit and flowers go hand-in-hand.

FUTURE POSSIBILITIES IN FRUIT GROWING IN KENTUCKY

G. N. McGREW, Livingston County, Ky.

The possibilities in fruit growing in Kentucky I consider very great. when we think of the mountain region of our great State and what a vast territory we have for fruit growing which can be made to yield fruits of all kinds in abundance. What a great revenue it would be to the State if we could get our mountain brethren to raising fruit more largely, for besides the revenue to the State, it would be a great source of revenue for the people of this section, a great portion of which could be made to yield fortunes to its owners where it is now lying waste and doing no one any good. What can be done to awaken those people to a sense of their duty? Truly the possibilities are great.

Now, Mr. Chairman, we want to notice the central or great blue grass portion of our State, which before the civil war was noted for her fast horses and fine cattle. But alas! she has lost her prestige and now other States are reaping the rich harvest that we should have. In the place of fine horses they are raising a noxious weed, wearing out their land and destroying the beauty of their homes. Had those farmers given as much time and attention to fruit growing as they have to tobacco growing, Kentucky would today be noted for her fine fruits. She would be more noted than California, for our fruits have a better flavor than the California fruits, and such fruits as we do raise are in many respects better than California fruits. What a great thing it would be to have fine orchards all over the State instead of hillsides

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plowed up and planted to tobacco; better make vineyards on those steep hillsides.

In the "Pennyroyal" and "Purchase" part of the State we find thousands of acres of fine fruit land that is not yielding the owners anything, which if they had it in fruit would be yielding a handsome income. Western Kentucky is noted for her fine apples, and other fruits grow equally well, but very few commercial orchards other than apple are to be found. In traveling over the country one sees so many fine locations for an orchard that could be made to produce fine fruit, it impresses us that the possibilities are great. But the question is, how are we going to develop this great fruit industry? There are several things in the way, the first being the lack of a correct knowledge of the great fruit industry of the country, in which people need education; another reason is that a man setting an orchard has to wait so long before it comes to bearing. This is a fast age, and people can not wait, forgetting that they are getting a good interest on their investment, with even more than compound interest. Another thing needed is closer attention to our orchards. We all know that a great per cent. of the trees planted never come to bearing, on account of neglect by the owner, resulting in discouragement both to him and his neighbors.

Old orchards are neglected and on that account do not pay the owner, neither would any of the cereals or any crop pay if they are so neglected. It is nearly impossible to raise fruit without spraying, and farmers as a rule are too busy with other work to attend to this job when it should be done, and it is, therefore, neglected.

Mr. President, the future possibilities of the State are very great, but how to develop the resources of our State along this line is a puzzling question, and one that I am not able to answer.

During the progress of the afternoon session an informal discussion occurred upon "The Artificial Heating of Orchards," which was participated in by Messrs. R. M. Cunningham, J. Rogers, and H. F. Hillenmeyer.

Following the paper of Mr. McGrew the meeting adjourned until 7:30 p. m.

The night session was called to order by Pres. Johnson and was addressed by Professor O. J. Stivers, Superinten-

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dent of Jefferson County Schools, upon the subject, "Improvement of Our Common Schools and Beautifying the School Grounds." The discussion which followed was lead by Prof. Eubanks, of Lexington, Ky.

The morning session of the second day, January 11, assembled at 9:30, with President Johnson in the chair. On account of the continued absence of the Secretary of the Society, President Johnson appointed C. W. Mathews, of Lexington, as secretary pro tem.

On motion of Prof. H. Garman, of Lexington, duly seconded, it was ordered that a committee of three upon resolutions be appointed by the chair. President Johnson appointed upon this committee: Prof. H. Garman, Chairman, with R. M. Cunningham, of Jefferson County, and A. E. Funk, of Bullitt County.

The regular program was then continued as follows:

THE NECESSITY OF LOCAL OR COUNTY ORGANIZATION.

T. L. BUTTON, Trimble County, Ky.

It is not probable that this subject has been assigned me without having as its object a description of the most successful organizations of fruit growers that exist in other parts of our country, which may be suggestive of measures possible for Kentucky orchardists to follow.

It is also not to be assumed that the writer would suggest that fruit growers in this State adopt practices that may be described without alteration and adaptation to suit conditions with which we are surrounded. I believe, however, that there are valuable lessons to be learned from finding out how other fruit growers meet their orchard problems.

If we live entirely to ourselves without regard to our competitors' methods, we are likely to soon find our competitors greatly excelling us in the quality of his product and in the financial returns received for it. If we find upon our own markets fruits from other States which have been protected against insect injury by up-to-date methods of spraying, and handled in the best possible manner by intelligent business methods, selling for prices which net the growers far greater returns than do ours, can not we afford to in-

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quire into the methods that have been responsible for the difference?

In the discussion of this subject, permit me to assert that we live in the most notable age of organization that the world has ever witnessed. All modern successful business operations are based on organization, and it is only those lines of business which are well organized that are eminently successful. Keen competition and an insatiate desire for greater profits have driven nearly all classes of industry not only to organization but to co-operation, and about all of our great industrial companies are co-operating in their respective lines.

It is something of this sort that is now taking place in agriculture. The fruit industry in particular is rapidly reaching the point where it can not be carried on longer in the haphazard manner which has heretofore been the general rule.

System must be introduced, and with it organization. Competition with the fruits of the great producing sections of the East, West and South is already keen here in our home markets. The regions of the West which are putting their boxed apples in our markets are well organized. They have studied the situation, seen the opportunity and found the means of improving it. It is not a fact of which we can be proud, that apples which to say the least are not superior to ours, can be grown fifteen hundred or two thousand miles from our markets in competition with our apples at prices two or three times that of ours.

How can we compete with organizations of hundreds of shippers embracing the whole of this great Western apple producing section, who are shipping thousands of finely packed boxes of fruit into our markets, except by a similar organization? An individual is strong enough if there were only a few individuals, but when an individual is one of a large class, he is weak, and the larger the class the weaker the individual. The farming class is possibly the most numerous in this country, and it follows that the farmer is the weakest of individuals when he stands alone.

The facts as we see them on every hand, bear out this theory. Practically every farmer stands alone in his farming and attempts single-handed to contend with all the co-operative interests of the business world. The result is that

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for the most part he is a negligible factor in trade. Farmers represent the greatest invested capital in the world. They control the world's supply of food and clothing, owning as they do the essentially productive part of the earth.

But although they possess within them this undoubted great power, they can only exert it through organization. Unorganized farmers are weak and the prey of all other strong individuals and organized classes. Organized they may exert a power second to none, but it may be well to add a word of caution here lest we misunderstand the true purpose of organization. It is not to tyrannize over the rights of their fellowmen that farmers should organize. Unless he can secure his just rights without infringing on the rights of others, possibly it may be better that the farmer remain as he is. Organization aims not altogether to increase the price of farm products, but to cheapen the cost of production, save the middleman profit, and secure the consumer a better article. Really organization should result in the betterment of all, and I am basing these facts wholly on a careful study of organization as existing in this country today.

If we examine the horticultural situation here in Kentucky we shall have no difficulty in observing great opportunities for improvement.

Our great needs are the application of modern and systematic business methods of organization to the fruit industry. To fully realize these needs and to impress upon ourselves the importance of the matter, let us look into the conditions of other fruit-growing sections where modern business principles have already been applied. There are a great number of places where organization has been very successful, but I shall only name some of the most striking. I shall not attempt a detailed history of these organizations, or dwell at length on their business organizations or working methods.

The average fruit grower here in Kentucky operates under several great difficulties. The grading and packing of fruit is not at all uniform or satisfactory in quality. Too much of our fruit is poorly packed, low in grade and not uniform either as to package or to fruit. The transportation and disposal of fruit is not at all satisfactory. Most of our fruit is moved in less than car loads, in which the service is poor and the cost comparatively high. There is not the

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proper relation between the producer and the consumer. Too much of our fruit is handled on consignment, and by too many dishonest middlemen.

The individual fruit grower, working alone, has no power to remedy this state of affairs. He is unable to remedy losses in transit, to trace shortages or to materially influence better service. But to not further enumerate the losses and difficulties incurred in handling fruit, let us try to find a remedy by which these difficulties may be partially or altogether overcome, by familiarizing ourselves with the methods and results of some of the most successful organizations of fruit growers.

Probably there are no fruit growers' organizations that have achieved greater success than the apple growers of Colorado and Oregon. Previous to 1903 Hood River Spitzenburgs, as fine as any grown now, sold for an average of eighty-five cents per box. The next year the "Hood River Apple Growers' Union" was formed and the same grade of fruit sold for $2.00 per box f. o. b. In the year 1905 the entire output went at $2.60 per box, and in 1907 their best grade of apples sold as high as $3.27 per box, all of which resulted from organization and business methods.

In Michigan we have a very noteworthy example of organization. The Fennville Fruit Shippers' Association was organized in 1891 and their growth and success have been steady and constant. Not only have better market and better prices, with cheaper and better packages and transportation facilities, been secured, but they have gone further and established the Central Packing House system. A local agent loads the fruit, which goes to Chicago by a special fast freight, and another agent receives the consignment and distributes the fruit. A standard package has been adopted, saving at least half its cost. The freight rate to Chicago has been reduced from six and a half to two and a half cents a basket. In one season six million baskets of peaches were shipped and the saving to the growers by the association was not less than two hundred thousand dollars.

Before the Michigan peach growers organized and their association began its work two hundred and fifty baskets were considered a load; now five to six hundred are easily drawn. The association has laid by a cash profit which has been used to build and improve roads. The combined in-

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fluence of the growers led the railroad to donate three hundred car loads of gavel for this purpose. Whereas a single individual has great trouble in getting the ear of the railroad officials, the representative of an organization of four hundred shippers receives a most gracious and respectful hearing. Buyers flock to Fennville to buy, and competition for association fruit has been such that prices have generally been kept higher than the Chicago market.

Possibly no State has had a more interesting horticultural development than Missouri. While Missouri is susceptible to a splendid development, it is no more so than Kentucky. By the united efforts of the fruit growers' organizations of Missouri great things have been achieved. By a special act of the Missouri Legislature, March 12, 1907, a State Board of Horticulture was created, and later appropriations of sufficient amounts to carry into execution a most wonderful development of Missouri's horticultural possibilities.

Those of us who saw it remember Missouri's mammoth fruit exhibit shown at the St. Louis World's Fair in 1904, which was a great advertising scheme, and resulted in a great influx of land buyers who wanted to engage in fruit growing in that State. Many of these people had no knowledge of fruit growing, but now the State Board of Horticulture is doing wonders in the way of educating Missouri fruit growers. They are sending their best and most practical fruit growers into every section of our country in search of the best and most efficient methods of orchard management. The Missouri State Board of Horticulture, the State Board of Agriculture, the Agricultural College, and the State Agricultural Experiment Station all work in harmony. The State Board of Horticulture has free use of all the equipment and facilities of the College and Station in working their problems. The State Board of Horticulture is co-operating with the State Board of Agriculture by holding their Winter Institute at Columbia during "Farmers' Week," thus giving the fruit growers an opportunity of meeting hundreds of farmers who are interested in other phases of agriculture, and not only forming many pleasant acquaintances, but also attending the sessions and hearing some of the talks on subjects that are of very great interest to fruit growers. They are teaching horticulture in their rural schools, and there are

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5,000 teachers who are interested in teaching agriculture and horticulture to 60,000 sons and daughters of Missouri farmers, the effects of which can hardly be estimated.

The plan of organization is the common one, and simple. Each member must hold at least one share at a certain fixed price. The entire cost of handling, whatever the character of fruit, is paid by a charge of so much a package. These organizations pack no poor fruit and guarantee every package that goes out under their label. The result is that such a reputation has been established that these products can be sold in the most exacting markets.

Many economies may be practiced by buying necessary supplies in large quantities, and an organization can keep in closer touch with the markets by the use of the telegraph and telephone than the individual grower can afford to do.

I might say that the general aim and practice of these organizations are simply: To prevent unnecessary competition in marketing among local growers and associations; to promote harmony among them; to provide for a uniform system of packing and shipping; to secure all possible advantages in the marketing of fruit; to build up a high standard of excellence and create a demand for the same; the diffusion of knowledge in all lines of horticulture; to provide ways and means for the growers of fruit to secure by co-operation among themselves and the transportation companies, the cheapest and the best service, and the proper distribution, marketing and sale of the same.

The necessity and benefits of county or local organizations of fruit growers have been conclusively demonstrated in many sections of our country, not only by greatly increased profits to the growers, but they have raised the whole standard of fruit growing in their sections of the country. A higher class of fruit has been prepared for market than the average individual would pack from his own fruit. Uniformity and style of both package and grade have been greatly improved, thereby securing the confidence of the buyer; also the buyer may secure a larger quantity of a uniform pack. Organizations are in a position to demand a fair deal from transportation companies since shipping is done in large quantities. A better system of marketing with less loss can be established, and a more complete knowledge of the markets secured. Packages, spraying materials and all other

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necessary supplies may be purchased in large lots at greatly reduced cost. Finally, I believe that the organization and co-operation of fruit growers secures to the consumer a much better product, and realizes the growers greatly increased profits.

THE DIFFICULTIES OF GROWING FRUIT IN KENTUCKY.

By H. GARMAN.

The difficulties of growing fruit in Kentucky are numerous and of various sorts. Some are due to climate, a few to soil, some to the general attitude of our people toward a business with which they are unfamiliar, many to insect attacks, and others to injury by fungus parasites. I wish to review briefly these difficulties, and to compare our own with those with which fruit growers elsewhere contend. For if Kentucky is so heavily handicapped by natural difficulties in the production of fruit as to make fruit growing unprofitable, or even less profitable than it is elsewhere, we ought, first, to know it, and then either to get rid of the difficulties, or learn to avoid them, and failing this, turn our attention to crops we can more easily and cheaply grow.

But simply because Kentucky has not gone as far in a business as her neighbors should not be taken as evidence that there are unsurmountable obstacles in her path. Because Virginia and Oregon produce more fine apples than we is not first-rate evidence that it is of necessity so. We are too much disposed to assume that prevailing conditions are the result of circumstances over which we have no control, and many men in the State who are by disposition admirably suited to the business of growing fruit for the market let it alone because of a feeling that it is not exactly the business for a Kentuckian—that stock raising, or tobacco growing, or hemp growing is more profitable and easy, forgetting that fashion dominates the style of farming in different sections of the country, just as it dominates us all more or less in the matter of dress.

What are the difficulties of *climate* which interfere with fruit growing in Kentucky? They are, (1) severe cold, especially sudden drops in temperature; (2) severe heat; (3) drought; and (4) excessive rainfall. Are we subject to a wider range of temperature and more frequent and sudden

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changes than are other States devoted to fruit growing? The facts compel us to answer that we are, as compared with some States, such as Oregon, and that we are not in the case of others, for example, Missouri and Southern Illinois. Nearness to the sea tempers a climate, renders it more equable, and thus plants are there less in danger from sudden changes. The coast States and those about the Great Lakes have some advantage in this matter. Among ourselves we can and ought to admit it, for if Kentucky is to become a great fruit growing State, we must learn as far as possible how to avoid the losses resulting from frost. It is the greatest handicap under which the fruit grower in Kentucky and neighboring States labor. If we could save our fruit from it, our other troubles could be met and conquered, not without care and labor, but still to such an extent that it would be safe to guarantee a good crop of fruit every other year and some fruit every year.

It is not my intention to go into details here with reference to methods of avoiding frosts, though I have confidence that we shall yet learn how to escape much of its ill effects. Most of you know of the practice recently adopted in Colorado and other Western States of making oil or coal fires in orchards on frosty nights. It should be tried in Kentucky. Some rather emphatic claims have been put forward recently for its effectiveness, and practicability otherwise.

The local effect of frost about premises ought always to be observed before selecting a site for an orchard. Hollows and low ground generally show much greater injury as compared with the hill tops and slopes. And again, a tract of low ground with rich soil and a disposition to hold moisture in the Fall encourages late growth of trees and leaves a tender, unripe wood especially liable to injury from frost.

The exposure, too, should be considered; an orchard ought not in the middle states, at this latitude to be placed on a slope where it will be waked up too early in the spring. Everything possible must be done to hold trees back in the spring, for it is always the early-blooming plants that suffer most. You will agree to this, I think, when you remember that peaches suffer more than apples, and Japanese plums more than plums of American origin.

We shall, I hope, sometime have at our command varie-

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ties so completely adapted to our climate that no loss will be suffered from frost.

SOIL.

There is no prevalent difficulty in Kentucky due to soil. We have soils in great variety, and may say that some of them are about as well suited for fruit growing as any in the country. Our troubles come chiefly from other sources.

POPULATION.

It is undoubtedly true that the kind of people occupying any section of a country will determine to a great extent the character of its agriculture. Some nationalities are more inclined to such occupations as fruit growing, and having pursued them for many generations have become more expert than others. It takes time and experience to develop an interest in, and capacity for any business. Our people have not in general thus far shown as much interest in fruit as they have in corn, tobacco and other field crops; but the people of every country pass through a series of stages during which they proceed from the general farming necessary in new countries to the special farming and finally intensive farming of older ones. Kentucky has not, I am sure completed her agricultural development and has certainly in a large part of the State not yet settled down to the special crops with which in the end many of her people will be concerned. Those enterprising spirits who first acquaint themselves with new phases of the subject will stand the best chance of getting the best of the profits. Some of them have already recognized the opportunity in the direction of apple growing. Many more should now be acquiring familiarity with the business. One thing is certain, namely, if the population we now have does not rise to the occasion and supply the demand for good fruit, it will be supplied by others, and eventually, if it is to be supplied by others, I believe the people who supply us will find it profitable to come to Kentucky and grow the fruit on our soils.

The population we have seems to me amply sufficient in every way to develop a horticulture at least equal to that of the States near us. A gentleman who has during a long life grown fruit in Kentucky and has faith in her as a fruit growing State wrote me recently:

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"Add patience to the Kentuckian's energy and enterprise and he can raise fruit as good and make it pay as well as in any other State. But he won't wait."

He must be patient; he must wait; in Oklahoma, in Colorado, in Oregon, in Alaska; why not put himself under these restraints here, where he has less to learn at less cost both of money and time.

The cost of land is a first consideration in dealing with the expense side of fruit growing, and here the advantage is certainly in favor of Kentucky, as compared with many other States. Land is cheap in the very best fruit growing sections of the State, and even where it costs most, as for example in Bluegrass Kentucky, it is but a short distance to cheap lands, not quite so good for tobacco and stock-growing, but much better for fruit.

The labor problem is a difficult one to deal with, but our difficulties are the same as those of other communities, and thus place us at no disadvantage. If the people of Oregon can give every attention they can think of to their fruit, and then ship more than half way across the Continent, we should in spite of the cost and uncertainty of labor, be able to compete with Oregon at least in our home market.

One of our greatest difficulties at present results from the small number who engage in commercial fruit growing and the lack of organized effort on the part of those who are so engaged. Western fruit growers pull together, and thus command better freight rates than we can get. These things will be corrected when our fruit growers become more numerous and perceive more clearly the advantage of working together. At present the profits of fruit growing are greatly reduced by the cost for freight and the necessity of depending upon commission men. I have been impressed by this latter feature of the business, by looking over some statements rendered last summer by different commission men to one of our fruit growers in Hardin County.

Here is an account rendered by the Busch-Grace Produce Company of No. 52 South Trent Street, Memphis, under date, September 13, 1910, for twenty-two barrels of Ben Davis apples:

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6 barrels, No. 2, at $1.00	$6.00	
16 barrels, at $2.25	36.00	
		$42.00
Freight charges	$11.25	
Commission	4.20	
		15.45
Net proceeds		$26.55

This is to say that 36.78 per cent. of what the apples brought at Memphis went into the pockets of the railroad and commission people. The same grower sent two shipments each of twenty-two barrels to two different commission firms in New Orleans, and made more money on them though still losing from 35 per cent. to 35.83 per cent. on the proceeds. The returns should be interesting to prospective fruit growers and I will give them below.

The first is from J. L. Beer & Company, of New Orleans, and is dated September 14, 1910.

15 barrels apples, at $3.00	$45.00	
7 barrels apples, at $1.60	11.20	
		$56.20
Freight	$14.52	
Commission	5.62	
		$20.14
Net proceeds		$36.06

The second is from George W. Davidson & Company, 307-311 Poydras St., New Orleans, and is dated September 15, 1910.

6 barrels, at $3.00	$18.00	
10 barrels, at $3.25	32.50	
2 barrels, at $2.00	4.00	
4 barrels, at $1.75	7.00	
		$61.50
Freight	$14.52	
Drayage	.90	
Commission	6.15	
		21.57
Net proceeds		**$39.93**

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Shipments to Cincinnati were more profitable. One of thirteen barrels to J. A. Massa & Company, of 108 East Front St., sold for $28.75, while the freight, drayage and commission charges amounted to $6.84, leaving a profit of $21.91, the charges being thus equivalent to about 23.79 per cent. of what the fruit sold for. Looking at the matter in a broad way the market for Kentucky fruit seems to be a most promising one. We are in the center of one of the very best agricultural sections of the United States, with a dozen large cities within easy reach by rail or by water. The population is bound to increase very greatly within the next quarter century throughout the Ohio and Mississippi valleys. And while present conditions as to freight may be discouraging, they can not but improve when our people have learned to work together as the fruit growers of the other parts of the county are doing. The Henderson County fruit growers have set an example which I hope will soon be followed by those of other sections of the State, and that all will then join hands and strengthen this State society. A good strong central organization with branches in every fruit growing section of Kentucky would make good terms for its members with transportation companies, and by annual fruit shows and meetings for the discussion of ways and means, greatly stimulate and help fruit growing in the State.

INSECT PESTS.

I have not yet touched upon the difficulties which were chiefly in mind when this subject was selected and know that my friends expect me to say something of the insect and fungus pests that serve everywhere to increase the cost and labor of growing good fruit. The subject is a large one, not to be disposed of in a minute. The cost of keeping fruit free from injuries of this sort is perhaps the largest single item of expense incurred by the fruit grower. But after having traveled over Kentucky repeatedly from end to end, after having inspected her nurseries and orchards for a dozen years, I can say that while she harbors most of the fruit pests known to occur in the Eastern United States, her difficulties of this sort, though serious enough, are no greater

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than those of States about us, and if we will but have patience and try, we can prevent in great measure the injuries of most of our pests.

In 1897 when the San Jose scale was beginning to appear in Kentucky a law was enacted at the special session of the General Assembly requiring the annual inspection of all nurseries in Kentucky and permitting the inspection of orchards when owners knew, or had reason to belive they were infested with destructive pests. The law is still in force, and as Entomologist and Botanist of the Kentucky Experiment Station it has been my duty to have our nurseries carefully examined for scale and other pests each year since the law was enacted. At first I found no scale in any nursery in Kentucky. In a few isolated localities it was known to be present in orchards, and since then there has been a gradual increase in the cases of orchard infestation, especially close about the cities.

From time to time in the course of my work as inspector, nurseries have been found infested, at first a single one, with a gradual increase as more orchards became infested, until a few years ago we had eight on our hands for treatment, and in 1910, six. The infested stock has been destroyed in part, and the rest in the infested nursery fumigated with hydrocyonic acid gas, and no certificate has been issued until I felt satisfied that the stock was safe for the buyer, and I believe that, imperfect though the law is, it served greatly to retard the spread of scale in the State, so much so, in fact, that we have now less of it than any of the States immediately about us.

But what I wish more particularly to point out in this recital is that in this destructive pest we have brought upon fruit growing throughout the United States a necessity for the treatment of trees which did not to the same extent prevail before. And I am not sure but that the advent of San Jose scale in requiring us to care for our fruit trees is calculated in the long run to be a blessing in disguise. We are, in Kentucky, and in other States, too much inclined to plant an orchard and give it little further attention. If it yields fruit, well and good, but if it does not, then the weather and the climate and the nurserymen get the blame. We should not expect animals to prove profitable if turned out in the woods and permitted at all times, in drought and blizzard, to shift for themselves, yet this is exactly what many of us

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do with our fruit trees. The San Jose scale has compelled those of our people who were determined to raise fruit, to care for their trees, and it has driven many of those who neglected their trees out of the business, as it will continue to keep them out and drive out still others.

And it has taught us methods of caring for our trees that we never knew before. Spraying for the apple worm was practiced before the scale appeared in this country. When the scale appeared, it was found necessary to use a gas, or a contact insecticide instead of a poison, and this necessity resulted, (1) in the use of hydrocyanic acid gas for the orange and lemon trees of the West, and later for nursery stock, for which it is still employed, and (2) in the use of the lime-sulphur wash, for the winter treatment of scale-infested orchards.

I have seen fruit trees in Kentucky that were badly infested with scale in the spring, on which it was only with difficulty that living scale could be detected in the fall. They had received a single thorough spraying with lime-sulphur wash shortly before the buds began to swell. Orchards with some scale constantly present, owing to the prevalence of the pest in the neighborhood, are now kept in excellent condition so far as producing fruit is concerned, though, of course they would be worth more to the owners if no scale was present. Some of the finest apples I have examined this year showed a few of the red spots and occasional young scale about the hollow at the free end of the fruit. They were so small and few in number that their presence had probably escaped the notice of the grower who sent them to me. I cite this case merely to call attention to the fact that by spraying, splendid fruit can be produced in spite of the presence of scale in an orchard.

And if we can circumvent this, the most destructive pest to all sorts of deciduous fruits that has been brought to this country, there would seem to be no reason why we can not deal with the rest of our insect pests. As a matter of fact, we are now dealing with them in many cases in such manner that they give us but little concern except as they greatly increase the expense of fruit raising.

FUNGUS PESTS.

We have made progress, too, in dealing with the fungus pests called blights, rots, and scabs, and while a few con-

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tinue to baffle us, most of them have been found in some degree amenable to treatment. We have more of these troubles to deal with in the middle states than do the people along the West Coast owing to our greater rainfall during the growing season. Yet we do not give as much care to checking these injuries as do the western growers. If we gave even half the care they give their trees to circumvent the things that roughen the surface of fruit, we should surprise ourselves with the result.

We have in this State a fungus disease known as the Apple Blotch. It was very prevalent last spring in an orchard in Hardin County in which I had some spraying done. The orchard had never before been sprayed at any time, and it was thought to be a good subject for a demonstration experiment. A single row of trees extending through the orchard was sprayed with Bordeaux mixture, consisting as you know of bluestone, lime and water, and with arsenate of lead, the latter poison being used to check the injuries of the apple worm. The row consisted of several varieties, some early, others medium, others late. I examined the Maiden's Blush, which ripened first, with special care to determine what effect the spraying had on both fungus and insect troubles, and can give the results with some completeness. The fruit was picked a little early. It would have increased a fourth or more in size if left a week or ten days longer.

On July 11, the fruit from a tree which had received two sprayings was picked and examined. It yielded four and a half bushels of sound apples, apples that would anywhere be regarded as "firsts." They were free from both scab, blotch and codling moth injury. This tree yielded also two and a half bushels of seconds, these apples showing defects of one sort or another, sometimes a little scab or blotch, again some effect of codling moth work. The first grade apples weighed on a average 3.15 ounces each; those of the second grade averaged about 2.59 ounces. This sprayed tree thus produced seven bushels of fruit, nearly twice as much of first class as of second class.

An unsprayed tree of the same variety in the next row was examined at the same time. It yielded a total of only four bushels of apples, only 0.66 bushels of which could be

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considered firsts, while the 3.34 bushels of seconds were badly blotched and scabbed and averaged smaller than the seconds from the sprayed trees. The average weight of the firsts from the unsprayed tree was only 2.47 ounces, of the seconds, but 2.01 ounces. Ten per cent. of the apples on this tree was affected with codling moth, while only 0.1 per cent. was affected on the sprayed tree.

COMPARISON OF FRUIT FROM TWO MAIDEN'S BLUSH TREES.

	Yield, Bushels	Yield, Bushels Firsts	Yield, Bushels Seconds	Average Weight Firsts	Average Weight Seconds	Diameter Firsts	Diameter Seconds	Codling Moth Injury %
Sprayed	7	4.50	2.5	3.15 oz	2.59 oz	2.44–2.64 inches	2.12–2.56 inches	0.1
Not Sprayed	4	0.66	3.34	2.47 oz	2.01 oz	2.16–2.44 inches	1.76–2.3 inches	10.

I was unable to examine the other trees as carefully as I did these, but the results were favorable to the spraying, Mr. Orthober, the owner of the orchard, writing that he considered the sprayed fruit sixty per cent. better. He proposes to get a spraying outfit of his own next year.

If there is any one here who feels doubtful about the benefit of spraying let him buy or borrow a spray pump next spring and spray one row through his orchad as we did, using four pounds of lime, four of bluestone, and three pounds of arsenate of lead paste in 50 gallons of water. Let him spray at once when the blooming period is past and again in ten or twelve days. I shall be greatly surprised if he does not satisfy himself by this experiment that spraying pays, and that it does not pay to raise tree fruits without spraying.

SMALL FRUIT PESTS.

The difficulties in raising small fruits in Kentucky seem to me less serious than those opposed to the grower of tree fruits. Small fruits less often fail, and are perhaps more easily protected from inclement weather. Grapes, raspberries, blackberries, strawberries, and gooseberries do about as well in Kentucky as they do anywhere. Currents for some reason are not as popular with growers as those named, and seem to me not to thrive as they do in the more Northern tier of states. They are subject to a leaf-spot that often de-

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foliates them badly. It can be checked in part by spraying with Bordeaux mixture, but the fact remains that they are not very popular, taking the State as a whole.

Gooseberries have made some money for at least one of our growers, Mr. H. W. Rahm, of Stithton. They have their troubles, chief of which are the Imported Currant Worm, and mildew, but both troubles can be managed when taken in season, the worm with hellebore, the mildew with Bordeaux mixture. Anthracnose of raspberry and blackberry is a serious trouble if neglected, but by careful removal and burning of old canes as soon as the crop is harvested and spraying the remainder with Bordeaux mixture, its injuries can be so greatly reduced that they are not perceptible in the crop.

Grapes seem to me a splendid crop for our Kentucky hills, and are about as certain as any fruit we grow. They rot badly everywhere, but when properly pruned and trellised, and then sprayed regularly with Bordeaux mixture, both before and after the leaves appear, black rot, also, can be controlled, and splendid crops of grapes be produced. If I were going into the business of fruit growing I should be tempted to grow grapes largely, because of the certainty of the crop and its convenience for picking, packing and handling for the market. It is not as perishable, also, when properly handled as are strawberries and some other small fruits, a quality which gives the producer time to dispose of it without much danger of having it spoil on his hands.

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To summarise briefly, I would say that while we have difficulties that must be met by the fruit grower, we are no more subject to them than are growers in other States. We need some of them to keep us awake and cut off the incompetent and careless. Perhaps this is nature's way of providing for our improvement—by a suppression of the unfit, and the preservation only of the fit. It is here as elsewhere in this world of ours that strength to do and skill to do and zest in doing, come from the surmounting of difficulties.

The next topic on the program, "How to Grow Peaches in the Ohio Valley," was discussed by Mr. R. M. Cunningham. A few years ago Mr. Cunningham came into possession of a tract of land about twelve miles south of Louisville.

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Casting about for some plan of utilizing this tract to the best advantage, he began planting it to fruit trees, although at the time quite inexperienced in the business of fruit growing. Recognizing his lack of experience, he at once began to make a study of the new enterprise, consulted with the experts of the State Experiment Station and read all available literature upon the subject. Following the most approved methods in planting, he headed his trees low to facilitate spraying, pruning and harvesting. In the years following the early plantings he soon became acquainted with a wide range of the insect and fungus enemies of fruit trees, investigated the spraying proposition, and was soon engaged in a warfare of extermination of these pests.

Mr. Cunningham uses fertilizers and manures liberally, hauling large quantities of manure from the city of Louisville, and is in addition using cover crops of rye, cowpeas, etc., for the improvement of his orchard land. He now has several thousand trees of Elberta, Henrietta, and other standard peaches, besides liberal plantings of other classes of fruit.

Mr. Cunningham emphasized the importance of organization in order to get more out of our fruit, showing from the experience of the Georgia peach growers in securing through trains and refrigerator car service, how much such co-operation may benefit fruit growers.

Following Mr. Cunningham's address, the society adjourned for its noon recess, beginning the afternoon session with an address by Col. Bennett H. Young, of Louisville, on "How to Grow Fruit Quick."

Col. Young's address dealt mainly upon his experiences with dwarf fruit trees, of which he had planted many in the past and would plant 200 more the coming season. He believed that 30 to 40 varieties of apples and 20 or more kinds of pears could be dwarfed advantageously. It is of little use to dwarf peaches, etc., as these stone fruits can be gotten into the fruit bearing stage in two or three years.

The dwarf trees can pe planted 10-12 feet apart, will

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begin to bear fruit the second year, and in the third year will yield quite liberally. This early production is also of special value in enabling us to test new varieties, and in his observation the dwarfs gave a crop of fruit which was probably a little finer in quality than that produced on standard trees.

Col. Young spoke further of the benefits he expected to secure from the new methods of protecting from spring frosts through the use of orchard heaters, which he proposes to try in the coming spring in his Jessamine County orchard.

Col. Young's address was followed by a paper upon—.

SOME OBLIGATIONS OF THE NURSERYMAN TO HIS CUSTOMERS.

H. F. HILLENMEYER, Lexington, Ky.

Trust and confidence are the basis of all business transactions, the assumption being that every party thereto will deal with absolute integrity. This is especially true of those relationships where the one, by reason of experience, study and technical knowledge, has greatly the advantage of the other. The physician who in a patient sees only the opportunity of practice, and the attorney in his client the opportunity of litigation, have no conception of the dignity or honor of their professions. He who is anxious to preserve health by suggestion and advice, rather than by the use of medicine, is the beloved Luke of our afflictions, just as the counselor who earnestly strives for peace and good will among men, is the unfailing staff upon which we lean with confidence. And to both will come the highest honor and the richest emoluments of their professions, for the well being of their patients and clients is, in its last analysis, the sure and only foundation of their material triumph.

The relationship of the nurseryman to the great mass of his patrons is exactly of the same character. The professional planter of fruits, trees and shrubs, is generally as well versed in the value of things wanted as the nurseryman himself. To these he is only as a merchant who must have in stock the things for which there is demand, but the vast majority of his patrons have no personal knowledge of the intrinsic worth of their contemplated purchases and are, or ought to be, largely guided by his advice.

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It is just as easy to raise a good tree as a worthless one, and in justice to the profession, let it be said that it is their usage to do so, limited only by the fact that tastes differ, and that the value of varieties often depends on soil and locality, and then he should not act in an advisory capacity, nor warp the judgment of patrons in better position to do for themselves.

The true touchstone that defines the relationship between the nurseryman and his patrons is their final success with the things planted. This really is the incentive that impels him to be an earnest student of all those questions that affect the ultimate value of his goods. He must be neither an idler, visionary nor a dreamer, for his patrons are largely such. Things come and go. The world moves. But the originator of a new kind can assign twenty reasons why his bantling is just the best on earth, and there is no way to affirm, deny or refute. It takes years to demonstrate the value of a kind—twenty-five for apples, nearly as many for pears, ten or more for peaches, cherries and plums, and half as many for small fruits and grapes. It is his office to be an experimenter, a tester, a cynic and objector, demonstrating by personal experience what is true and what not. There are fakers in his own profession, and an abounding crop of fools for them to fleece. To the conscientious and plodding nurseryman, the one is a reproach and the other a misfortune.

I am ashamed to admit some of the history and facts of tree selling and planting of the past half century. There has been a class of originators and introducers who have used the nurserymen to dupe their patrons. The one were uninformed enthusiasts or swindlers, pure and simple, and the others, unconsciously perhaps, their tools. To be more direct and explicit, let me recall the history of the Russian apples and apricots, the Japan plums and persimmons, the seedless apples and plums, the coreless and blight-proof pears, the wonderberry, the white raspberries and blackberries, the winter rhubarb, the hardy orange and olive, the ever-bearing and never-freezing peach and all the things of the same ilk that have swindled the general planter, and been a reproach to those who aided and abetted in their dissemination. Whether the cupidity of the one, the ignorance of the second or the gullibility of the third exceeded is a moot ques-

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tion. The facts remains that the first two lost in character, and the third in time and money by such nefarious methods.

There is one claim made, generally by agents and occasionally by nurserymen, which I wish to disavow. It is this: That by certain methods of propagation trees acquire greater hardihood, capability of resisting adverse conditions, and more enduring usefulness. Under this caption are charletans, who like the stars vary in magnitude and luster. I do not wish to consider at all that class that would ingrain on the apple the durability of the oak by grafting on its virile root. Such are meteors that shoot like a rocket and fall like a rock. Falsehood is dangerous just as it is incorporated with truth, and the more truth, the more insidious the error. The influence of stock upon scion is an intricate question. It is one for the nurseryman rather than for the planter, and I regret to say that the planter often does not meet it with proper repudiation. The difference between a bud and a graft is that of a bone healed in splints or a plaster cast. The difference between a whole root, a branched root and a part root is exactly that of the ability of the supporting system above to develop one kind of a root or another. The value of one kind of a stock or another depends entirely on how congenial one is to the other, and how the capability of one is equalled by the other. Yet around these simple laws how much of error and disappointment! Let the nurseryman and his patron ever bear in mind that things prosper and grow old each in its own kind. The children of Abraham as the vine of Eschol are so virile and enduring because of the purity of their lineage.

The average tree agent is held in contempt. He is a carrion kite, ready to feed at either end of his existence, or at both. He is a Gypsy, here today and gone tomorrow, leaving perhaps a trace of good mingled with the fullness of his mendacity. The opportunities of the nurseryman, as such, are great, but he must be both fearless and patient. He is not a seer. He can not foretell with certainty the value of things until he has tested them. Let his patrons have faith and patience, holding on in the meantime to things tried and true. It is for him to blaze the way and make straight the path. The world moves, but moves so slowly. It is the destiny of

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the many to follow. Let the few who lead be sure of the light.

Let here tribute be paid to American nurserymen who have written, in letters of gold, the story of their achievements—Cox, Downing, Warder, Wilder, Meehan, Hanford Rumford, Moore, Rogers, Campbell, and all their glorious co-laborers. Let us not forget the pioneers, in the same good cause, in our own State—the Downers, Walker, Hobbs, Jones, Bell, Dietrich, Garrett, Samuels, Houghton and the long line of truly honest and capable men who strive so earnestly to regain for us a paradise lost.

But while paying tribute to one set of men for the raw material produced, let us stand uncovered and unsandled before those philanthropists who began where their co-laborers ended. It was men like Turner, Tarlton, the Youngs, of Louisand Nicholasville, Mantelle, the Vimonts, Webb and such as they who actually closed the watering mouth of humanity with the richness of their effort.

Following the reading of Mr. Hillenmeyer's paper the Committee on Resolutions presented its report, which was read by Mr. R. M. Cunningham, as follows:

Your Committee on Resolutions begs leave to make the following report:

Resolved: 1st, It is the sense of your committee that the time has arrived when some very active and aggressive work should be done by the horticulturists of Kentucky.

Resolved: 2nd, That a committee of three be appointed to draft a bill to be presented at the next Legislature, praying that $5,000 be appropriated to the State Agricultural Department for the advancement of fruit growing in the State of Kentucky, and that said appropriation shall be expended under the direction of this society.

Resolved: 3rd, that said committee be requested to visit the Legislature at such time as the committee may think best, in order to confer with the proper committees for the introduction of said bill.

Resolved: 4th, That it is the sense of this committee that a meeting of the Horticultural Society should be held during the meeting of the State Fair, and that all members of this association be urged to make exhibits of fruit at the State Fair.

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Resolved: 5th, That the Horticultural Society will hold a meeting next January at the State University at Lexington at the same time that other agricultural societies are meeting; and that it is further the sense of this committee that exhibits of Kentucky grown fruit be made at this time. It is further the sense of this committee that the next meeting be as widely advertised as possible, and all growers of fruit in the State be requested to attend.

Resolved: 6th, That we express our sense of deep indebtedness to our President for the unselfish labor he has devoted to the society and to the horticultural interests of Kentucky.

Resolved: 7th, That this society tenders its sincere thanks to the management of the Louisville Free Public Library for the use of the hall in which the meetings of the society have been held.

Respectfully submitted,
H. GARMAN, Chairman,
A. FUNK.
R. M. CUNNINGHAM.

Upon motion of Mr. H. F. Hillenmeyer, seconded by Mr. T. L. Button, it was ordered that the resolution be adopted. Upon motion of Mr. E. E. Goose it was ordered that the society proceed to the election of officers for the ensuing year.

Nominations were then called for, for the office of president. Mr. Hillenmeyer nominated Mr. M. F. Johnson, the present incumbent, but Mr. Johnson reiterated his desire to be relieved of the office, preferring that some one should be chosen who is actively engaged in fruit growing.

Mr. R. M. Cunningham was then nominated, and the nomination being duly seconded, he was elected. Mr. Cunningham was called to the chair by Mr. Johnson, and made a brief speech of acceptance.

Mr. Johnson's name was then proposed for vice president, but he objected and nominated Rev. E. McCollom. The nomination was seconded and Mr. McCollom was elected.

Upon nomination of Mr. H. F. Hillenmeyer, duly seconded, Mrs. J. M. Garrett, of Woodford County, was elected second vice president.

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Mr. T. L. Button was nominated for the office of secretary, but stated that it would be impracticable for him to serve. C. W. Mathews was then nominated, duly seconded, and elected secretary.

Upon motion it was further ordered that the duties of treasurer should be combined with those of secretary, and C. W. Mathews was elected secretary-treasurer of the society.

On motion of Mr. Johnson it was ordered that an executive committee of five be appointed by the president.

Following the election of officers the regular program was resumed with an address by Hon. D. H. French, of LaGrange, on "Amateur Horticulture in Town." Mr. French gave an interesting account of his experience in growing grapes and various small fruits on a town lot, together with wider experiences in grape growing upon five or six acres of land.

Attention was called to the fact that President Johnson's report had not been acted upon, and upon motion it was ordered that the report be adopted by the society.

The remaining papers of the program were then presented as follows:

SHOULD OUR ORCHARDS BE CULTIVATED?

S. A. STRAWN, LaGrange, Ky.

The question of orchard culture is one in which every owner of an orchard should be interested, and of which every horticulturist, to be most successful, must have practical knowledge.

True horticulture is that culture an orchard should receive to bring about the most permanent desired results in an abundant yield of fruit within the earliest possible time.

No orchardist is willing to wait as long as the Irishman, who, when given his choice of a tree on which to be hung, chose the gooseberry bush, and when told it was too small, said, "Faith, and I will till it grows."

We want quick and permanent results. To accomplish this, we must cultivate with what the chemist was informed

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to use when he asked a customer how he should mix a certain prescription, and the reply was, "With brains."

The horticulturist also, laboring under wisely varying conditions, must adapt his methods of culture to those conditions. Good culture, therefore, in the broadest sense, does not mean merely the conditions stirring and turning of the soil like an automatom, regardless of results, but the giving of such care and the application of such methods as, under widely varying conditions and circumstances, will produce the best results in crop production with the least possible loss of the essential constituents and necessary physical characteristics of the soil.

The methods of culture may be divided into two classes, clean and sod culture. Let us first consider the preparation and cultivation of the soil in readiness for the planting of an orchard for clean culture. Some one has said that the training of a child should commence one hunderd years before he is born; also the culture of an orchard should commence a couple of years before the planting of the trees. Another has said, "Work begun right is half done." This is especially true in the preparation and cultivation of an orchard.

An ideal location for an orchard is a gentle northern or western slope which will—

(1) Protect the soil from alternate thawing and freezing.

(2) Delay the blooming in spring.

(3) Protect the blooms when there is a frost from the morning sun.

(4) If elevated, will be protected from heavy frosts.

If soil is quite fertile, it should be put in corn or potatoes a couple of years before planting, to free the land of an excess of nitrogen and destroy the insects and worms. If poor, it should be put in cowpeas, soy beans, or some of the legumes a year or two before planting.

For immediate preparation, cover well the soil with barnyard fertilizer and turn under in the late fall or winter, thoroughly working and pulverizing the soil for early spring planting. Subsoiling especially in heavy clay land is a great benefit, for after trees are planted there is no opportunity for deep plowing. Indeed, nearly all soils need deepening in order to grow most of fruits to best advantage, and this is especially true of peaches. After the soil is prepared, im-

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mediately dig the holes for the trees about two feet square and sixteen to eighteen inches deep, filling in with barnyard fertilizer, leaving there till trees are planted in early spring, then throw out and fill in with soil till the tree stands two or three inches lower than in the nursery row; fill in two-thirds full, thoroughly working the soil about the roots, then fill with water till the soil is thoroughly saturated, complete the filling of the hole till rounding, and leave it perfectly loose on top as thrown in. Use only the best of the soil around the tree, throwing the rest away from the tree.

Some crop can be put in for the first two years, or more. Corn, potatoes and sweet potatoes are among the best as they all require cultivating at the time that the fruit trees should be cultivated, and if properly fertilized, will not impovrish the soil. Strawberries are also recommended, but at the time of year the trees should be cultivated, after the first year, strawberries are in the mulch, and I question the wisdom of planting them, after giving it a trial.

Second we will consider the preparation of the soil for sod culture. Dig a large excavation in the soil about 18 inches deep, in the fall of the year, and fill with barnyard manure, and in the spring remove, and fill with fertile soil till the trees stand a couple of inches lower than in the nursery row; place the tree and fill two inches of good soil, working the soil well in round the roots, and press down firm. Now, fill in with water till well saturated; then, fill rounding with earth, leaving it perfectly loose. A good fertilizer mixed in with the soil, but not coming in contact with the tree, is excellent.

We now come to the consideration of the cultivation of the orchard under the clean culture system and the sod culture system. Both have been tried under different and same conditions and both have been a success and under certain conditions both doubtless would fail. In order to bring both methods more closely before you, I will present to you the results of the Ohio Experiment Station at Wooster, Ohio, in thoroughly testing the above methods.

In the spring of 1900 they planted a block of eighty trees. Of these there were two rows of Jonathan of twenty trees each, and two rows of Grime's Golden of twenty trees each, running side by side. The soil was uniform relative to fertility, and sloped gently to the west and was divided into four

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plots. Two of these plots were given to clean culture and two were given to sod culture, thus testing the extreme of these methods, as follows:

Plot No. 1	Plot No. 2	Plot No. 3.	Plot No. 4
Clover crop	Clean culture	Sod culture	Grass mulch.
	Jonathan two rows.		
	Grime's Golden two rows.		

The cover crop method consisted in plowing the ground in early spring and cultivating with a five-tooth cultivator or harrow at intervals of about two weeks. This stirring of the soil was continued until about the first to the middle of July, when a cover crop was sown of soy beans, cowpeas, winter vetch, mammoth and crimson, or medium, red clovers, also a combination of oats and Canada field peas for a winter covering. Some advocate the sowing in drills three-fourths of a bushel of cowpeas, and cultivating them a couple of times, and just before the last plowing, to sow rye and vetch for a winter covering. However, always remember for tree growth let the legumes be used. If too much growth, which would tend to make the trees winter-kill, sow rye mixed with oats, which will supply humus without nitrogen.

In plot No. 2 clean culture was continued till late fall, and left without any winter covering whatever. This was continued for four years, and discontinued as the soil washed away by the ton and many roots were left exposed to the sun and deep gullies, wasted, which necessitated a filling up with brush, straw, etc. Plot. No. 2, then, was given up as a failure and changed to the cover crop system by which it was hoped to restore as far as possible the damage done by absolute clean culture.

The above method is followed in northeastern Ohio and to some extent in Michigan with success, but the soil must not only be filled with humus and be rich in nitrogen, but also level to avoid washing.

In plot No. 3, given to sod culture, the soil was dug up three to four feet in diameter around the trees and kept clean and mellow by a hoe or rake annually. The grass on the plot was cut three or four times each year and left on the ground to enrich the soil, no other fertility being added. The circular cultivated places were enlarged each year to compare with the growth of the top of the tree.

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They state the above method to be the most expensive of any and it is recommended only for small pieces of ground, such as yards or lawns or stony places, that can not be cultivated or where mulch can not be obtained. However, I can not see why barnyard or other fertilizer can not be used upon the cultivated grounds in late fall, as I have done so for a number of years on my own lawn with success.

In plot No. 4, as in plot No. 3, trees were planted in sod but instead of digging up the earth around the trees the places were at once heavily mulched with straw. The stems of the trees were enclosed by fine meshed wire screen cylinders to prevent injury by mice or rodents.

The grass was mowed three or four times each year, but instead of letting it remain where mown, it was raked up and put around the trees. This method is especially adapted for hilly ground and has a number of advantages which the clean culture method does not have, viz: this system of culture keeps the orchard in a sightly condition, and pruning, spraying and hauling of fruit or brush can be done without the inconvenience of soft ground and mud at any time of the year desired.

RESULTS OF DIFFERENT METHODS OF ORCHARD CULTURE COMPARED.

As already stated, plot No. 2 is barred from comparison as it was overtaken with disaster in four years.

After six years, in plot No. 1, known as the culture and cover plot, we find soil conditions excellent. The annual turning under of a growth of leguminous plants, produced each autumn, has filled the soil with humus and increased its fertility. The trees have made good growth, better than plot No. 3 in soil culture, but not so heavy as trees in plot No. 4 in sod mulch. There has been some difficulty in keeping the ground from ridging.

Also, during the first two or three years, trees in plot No. 3 made nearly as good growth as these in plots No. 1 and 4. But in the last two years there was a remarkable falling behind in growth. The above, however, is not surprising as the ground beneath the trees had been bare and received no fertility. Had they received fertilization of some kind and mulch each year, their growth might have been as great or greater than in 1 and 4.

In plot No. 4 (sod mulch) the growth of the trees has

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been vigorous and steady from the time of planting till end of the sixth year. This method concentrates plant food upon special areas where it will be most available to the feeding root system of the growing trees. The first effect of a heavy mulch is the retaining of moisture by preventing evaporation from the soil of area mulched. The surface of the soil is thus kept moist and the rapid decay of the vegetable matter in contact with this moisture surface not only provides humus and plant food, but the chemical action in the soil beneath, produced by the decaying vegetable matter above, results in the liberating of mineral elements of plant food and the forming of nitrogen. It has also been argued that, should the mulch be stopped, the roots being nearer the surface, that drouth would have more effect than in the clean culture and cover crop culture, but on examination this is found to be without foundation.

In comparing their girth one foot above ground, they measured as follows:

Plot No. 1, cover crop plot, was .....9.71 inches.
Plot No. 3, sod culture plot, was .....8.55 inches.
Plot No. 4, sod mulch plot, was.....10.56 inches.

In yield of fruits, the different plots compared as follows:

		No. Apples	Weight, lbs.	Average, ozs.
Jonathan	Cover crop	70	21	4.5
	Sod culture	29	7	3.86
	Sod mulch	172	55	5.16
Grimes	Cover crop	59	23	6.23
	Sod culture	0	0	0
	Sod mulch	82	30	5.95

From the above observations, the sod mulch system in culture of apples proves for the first six years to be the best.

I have experienced excellent results with clean culture the first year and mulching around the trees just before the dry weather sets in, or about the middle of July, thus retaining the moisture.

Plums cultivated and mulched made three times the growth the first three years that those did planted in sod and not mulched, grass being kept down so as not to smother

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them. I have also experienced excellent results with blackberries around peach trees, picking as high as one bushel from a single tree at three years old. The same year, however, I picked the same amount off trees cultivated with nursery crop of sweet potatoes.

PEARS FOR KENTUCKY.

T. L. BUTTON, Trimble County, Ky.

In my section of Kentucky we can grow the very finest pears, and I think almost any of the best varieties will do well with us. I have growing on my farm Keiffer, LeConte, Lincoln, Coreless, Duchess, Vt. Beauty, Smiths, Hybrid, Konce, Clapps, Favorite, Lawrence, Sheldon, Magnolia, Japan, Russett, Bartlett Hybrid, Comice, Ozark, Rutter, Rheils Best, Fame, King Karl, Howell, Snyder, Possney, Tyson, and possibly a few more kinds, and while several of these varieties have not yet borne fruit for me the trees are extremely vigorous and promise fine crops of fruit later.

Besides the above varieties I have the Seckel, which I consider one of the best pears we have, both for market and home use. The Seckel is early and a prolific bearer and the fruit is first class in quality and sells high on the market. I had some six-year-old trees that bore about one bushel per tree last year, and I have not noticed any blight on my Seckel trees at all.

For commercial purposes and money makers, the Keiffers surpass all other varieties combined in my county, however much they may be condemned and scoffed at in other places. No other pear can equal the Keiffer for hard-fleshed, resistant, long-keeping qualities, and when picked at the right season and properly ripened, it nearly equals the Bartlett in juiciness and flavor.

The LeConte possibly is one of the best varieties to plant with Kieffer for pollenizers, as it blooms at the same time, and being very smooth and bright colored, and having a satin-like skin, seems to impart some of the characteristics to the Keiffer, but this phase of pollenizers for the Keiffer pear has never been seriously considered by any of our fruit growers, and my own experience is hardly sufficient for an intelligent discussion of the matter.

We all know what a splendid pear the Bartlett is, and it also is a good pollenizer for the Kieffer, but while the Bart-

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letts and LeContes are both good pears, they are about the most susceptible to blight of any varieties we have, and because of this fact the Garber pear is being planted with Keiffers more successfully than any variety I know of. The Garber is a regular and prolific bearer, and while the color is bad, it ranks second among commercial pears in my section of the State. The Garber blights very little.

So far as I know there is no section of country which produces better and finer Keiffer pears than Trimble County, but we are greatly damaged by having two or three types of Keiffers in our orchards, caused by indiscriminate cutting of buds by nurserymen. We have seen the large dark-skinned, coarse-grained Keiffers with rough uneven surface; others almost round with mottled skin; and then we have the typical pear-shaped Keiffer with light green, thin silky skin, smooth surface and crimson blush. This latter type meets the demands of our most discriminating markets and sells at a price greatly in advance of the other types named.

If I were going to do all my planting over again, I would either grow my own trees from buds selected from bearing trees of the best and most perfect types, or have such trees grown by some good nurseryman even if such a course delayed the planting two or three years.

Pears are the easiest tree fruits grown, being extremely hardy in both tree and bud, and will stand more abuse and damage *less* by neglect than any other orchard tree, and will produce more fruit on thin, rough land than any orchard fruit I know of, and the pear is also the most resistant fruit we have to insect injury.

Standard pear trees should be planted from 20 to 25 feet apart. After a few years cultivation and when the trees are well started, sowing the ground in grass will hasten the bearing of fruit and reduce the susceptibility to blight, as the growth of wood is not so rank and tender as on cultivated trees; but when blight is plentiful in an orchard, either cultivated or in grass, when the conditions are right it spreads rapidly. Blight is the greatest hindrance to pear growing in Kentucky, and I am not sure that there are any perfectly resistant varieties.

It is generally conceded by some of our best authorities on such subjects that fire blight is the result of inoculation of bacteria, and this being so it is first necessary to have an

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inoculation of bacteria before we can have blight. If we have no bacteria we will not have blight until we get the inoculation.

These bacteria live through the winter under the bark of good sized limbs, or on the bodies of the trees just below the line of the dead wood. When the sap begins to flow very rapidly in any warm murky days of spring, there is an oozing of this bacteria infected sap, which is somewhat sweet. Bees, flies and other insects are attracted to it, and becoming smeared with sap and bacteria, visit the blossoms and tender shoots and inoculate them, thereby often spreading blight all through an orchard in two or three days.

To most effectively control the blight, the first step is to prevent the inoculation of the trees with the bacteria, and second, to stop the spread or development of bacteria after it becomes inoculated. The first may be accomplished by removing all the old hold-over blight in which are the bacteria that ooze out when the sap is active and carried to the blossoms and tender shoots by bees and other insects. All blighted wood should be cut out below the dead line of bark a few inches, and it is necessary that this work should be thoroughly done before growth begins. After blossoming time and when growth is well started, all infected blossoms and young shoots should be broken out every few days according to the weather conditions and the spread of the blight. By adhering closely to these rules I am controlling the blight to a greater extent than ever before.

COMPETITION IN KENTUCKY'S HORTICULTURAL PRODUCTS AND HOW TO MEET IT.

C. W. MATHEWS, Lexington, Ky.

Any observant person who looks over the vegetables and fruits displayed in the markets of our larger towns and cities will notice a vastly greater variety of products than were to be seen in the same markets ten or fifteen years ago.

He will find further that these products are drawn from a much wider range of territory than was common even a decade ago. He will find also, especially in the Fall and Winter months, that the supplies furnished by the local gardener and fruit grower occupy a relatively small proportion of the space on the market house stand. Too often he will regretfully have to admit that the local product is inferior to that shipped in from other localities.

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A few weeks ago I gave a somewhat careful examination to one of the best displays in our market house at Lexington. There was an excellent assortment of fruits and vegetables numbering perhaps forty or fifty different kinds. It included tomatoes, egg plants, peas, beans and radishes from Florida and Louisiana, onions from Texas, mushrooms and winter squashs from Ohio, celery from Kalamazoo, and apples from Colorado and the Pacific Coast. The market man complained that he could get very few kinds from local sources, and in evidence showed me as almost the only representatives of the local products, some very good turnips and a miserable lot of unwashed and unsorted parsnips, fit only to be thrown to the hogs.

I would not imply any discredit to the ability of Fayette County gardeners, as I know that among them are men of the highest skill who are producing high class products both for the local markets and for shipment to other points. I am simply recording the facts as they were found upon that particular day.

All this means that to a rapidly increasing degree there is developing an enormous traffic, resulting from a freer interchange of orchard and garden products. It is an evidence that the business of vegetable and fruit growing is rapidly developing a degree of specialization similar in kind to that which was earlier introduced in mercantile lines. Horticulturists are giving more critical study to the adaptibility of their soil, climate and market facilities to the production of certain crops, and are showing a degree of skill and energy in the production of these special crops never before known.

With the increased skill in producing these special crops, the growers are learning that it pays to grade more carefully and to give more attention generally to placing their products upon the market in the most attractive manner.

The results of all this specialization and wider shipment of horticultural products means a keener competition in our own markets for our home grown products.

In market gardening it means that we must take more pains to produce vegetables of the highest quality and place them upon the market in more attractive form. Other things being equal the local gardener always possesses at least one advantage, which in the case of delicate and perishable products can not be taken from him. With sufficient care in

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growing and handling his crops he can place them on his market with a freshness of appearance and delicacy of flavor with which a corresponding crop grown a few hundred miles away can not possibly compete. Who wants lettuce or peas or sugar corn or strawberries that have been shipped two hundred miles if these can be secured from local sources?

There will always be then an opportunity for the skillful gardener and fruit grower, properly located, by a careful study of his local market, to supply that market with the more perishable products at a fair profit. To offset the cheaper production of more distant points he must especially study the question of varieties and methods of culture, that will result in products of the highest possible quality.

Many of our horticulturists, however, are not so situated as to cultivate a local market, and lack that close personal touch with the needs of the consumer which the nearby grower possesses.

Already it has been demonstrated that certain localities in our State of Kentucky have a peculiar adaptation to specific crops. The region about this city has, for example, proved its adaptation among other things to the extensive production of onion sets. Jefferson, Trimble and adjacent counties have shown what they can do in peach growing. The counties lying to the southwest of us are showing us what remarkable apples they can produce, and so the list might be extended to other counties which are becoming known for some special line of product.

For each of these local developments we are indebted nearly always to the efforts of some enterprising and forceful pioneer, who has successfully overcome his local difficulties and has shown to others the possibilities of his home surroundings in the way of crop production.

It is safe to prophesy that there will be many more discoveries of this nature yet made in Kentucky. Large sections of our State have—horticulturally speaking—not yet found themselves.

With the horticultural—more particularly the fruit districts—developed as they are in Kentucky today, what, we must ask ourselves, are the lines of effort to follow whereby we may hold our own with the competition already existing in our Kentucky markets, and push out to secure a reasonable share of the markets of other States.

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We do not have to work out this problem wholly by ourselves as our competitors have already to a large degree solved it. Our efforts toward this end, to yield the greatest success, should follow, as it seems to me, along three main lines.

First—The growing of a higher average grade of product through methods already known and widely practiced.

Second—The establishment of higher standards of grading and packing and a rigid adherence to these standards.

Third—The development of a co-operative spirit in local fruit growing communities to the end of organization for purposes of *production first,* but more especially for the purpose of properly distributing the products.

Individual growers here and there over the State have already demonstrated that the production of the highest classes of fruit is possible in Kentucky as well as in Virginia, Colorado, or Oregon.

Wherever fruit of the highest grade is produced, year after year, it is perfectly certain that the growers are looking after the *fertility* of their orchards. Among intelligent orchardists the idea is no longer current that fruit trees will indefinitely produce their annual crops without feeding. It is equally certain that the finest fruit is now in practically every case produced only through the practice of spraying.

While the methods and materials for spraying will be still further modified with increasing experience in its use, it has already been sufficiently perfected so that in an average season it has become possible to produce, at least in the case of apples, fruit practically free from insects and fungous injury. So far perfected, indeed, that we are informed upon good authority that a grower—not in far off Oregon—but in the neighboring State of Missouri offered 25 cents apiece for every wormy apple found in his orchard, and without takers.

What some men in our own and other States have learned to accomplish through fertilizing, spraying, pruning, etc., others can and will in increasing numbers do in the coming years.

I believe, furthermore, that in the recently developed orchard heater we are to find another valuable ally in fighting the battles in behalf of our orchards. Jack Frost has for generations in this latitude been considered the one enemy

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before whose attacks we must submit as to the inexorable decrees of Providence.

Experience in other sections seems to give promise that we may yet destroy the power of this last and greatest enemy to Kentucky fruit growing.

Our standards of quality in the East have long been too low, and it has taken the lessons taught us by the growers of the Northwest to teach us the error of our ways.

Let us give credit where credit is due and yield to the growers of Colorado and Oregon that honest admiration of their work that is rightly their due. Handicapped by the distance of three or sometimes six thousand miles from their market, they have succeeded, in spite of almost insurmountable difficulties, in placing upon the markets of the world, in quantity, a combination of beauty and quality of product such as was never known before this beginning of the twentieth century. We have been taught by them the meaning of perfect fruit, the beauty of uniformity in grading, and the advantages of the small package.

It is no exaggeration to say that of the millions of barrels of apples annually produced east of the Rocky Mountains not one in one hundred contains the same quality of fruit in the middle as is shown at the ends of the barrel. A recent purchase of Baldwins from New England was bought as number ones. An inspection of the fruit suggested that the standard for number ones in that region might be taken to be that grade of apples that contained only one worm hole. Perhaps number twos would mean an added worm hole in each apple. Another slightly better barrel was marked. * * * * *

So long as New England or Ohio or Kentucky sets up that type of product as the standard of excellence in fruits or anything else, so long shall we be satisfied with low performance in the output from our orchards and gardens.

We may cover the head of a barrel with x's but it will not inspire confidence in what is inside, and the buyer will insist upon an inspection before he purchases.

The box package exhibits the same tendency toward smaller units in the marketing of food products which is shown in the milk bottle, the breakfast cereal and other supplies of the grocery. It lends itself naturally to careful packing, uniformity of contents and daintiness of appearance, all factors to which the grower of choice fruits must give con-

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sideration. In some form, the small package has undoubtedly come to stay, and will increasingly be in demand for higher grades of orchard and garden products, while lower grades and culls of the orchard will perhaps for a long time hide their defects and blemishes in the depths of the old-fashioned barrel.

The third instrument by which competition is to be met, that of co-operation and organization, is no less important than the other two. It is a natural result of the observed fact already noted, that the production of any fruit or vegetable tends to increase in those districts to which experience shows it to be particularly adapted; a natural result *also* of the familiar fact that a skillful grower is often not equally skillful in marketing his product.

While we are not without successful organizations for this purpose in Kentucky, we may again profitably look away for the most eminently successful instances of co-operation among growers.

It is said that the boxes of Hood River fruit are the only packages of apples reaching the London market which are purchased without a critical inspection. If this be true, as it doubtless is, the growers of that famous Oregon valley may well be proud of that fact. It means that most difficult accomplishment—the acquirement of a reputation for unfailingly perfect fruit, which can only be obtained at the cost of long continued and most rigid self-discipline.

It means that the individual grower has completely merged his interests with those of his fellow workers. In carrying out this plan we are told that the packer of the fruit is independent of the individual grower, and in rigidly selecting and culling the fruit observes only allegiance to the purposes of the organization as a whole.

Such methods of production, of standardization, and of packing have brought fame and prosperity to other regions where conditions as a whole have not been more favorable than those which we enjoy. Followed with the same intelligence, persistence and patient cultivation of the co-operative spirit, we may rest assured that they will be the means of bringing a brighter outlook to the grower in Kentucky.

Following the completion of the program the meeting was adjourned by President Cunningham to meet next at the State Fair in Louisville, Ky., in Septemper next.

CLARENCE W. MATHEWS, Secretary.

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